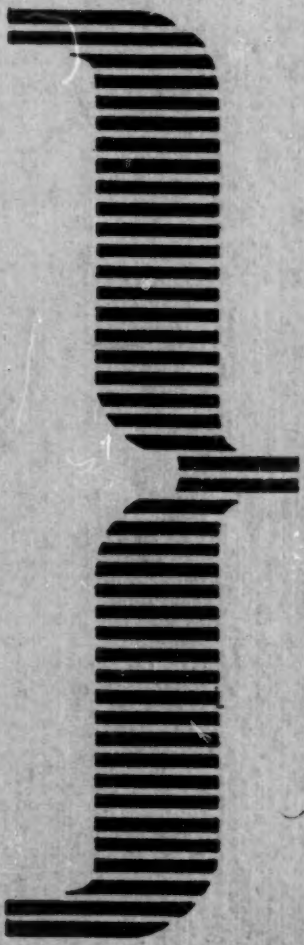
etc.

a review of general semantics



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OLIVER BLOODSTEIN: General Semantics and Modern Art

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SCIENCE AND VALUES

EDWARD L. THORNDIKE

[The following paper by Professor Edward L. Thorndike, originally delivered in St. Louis, December 30, 1935, on the occasion of his retirement from the presidency of the American Association for the Advancement of Science is perhaps the best that could have been selected as an introduction to ETC. Professor Thorndike is an outstanding scholar with wide experience, an author of many works of importance, and an authority on his subject. This presidential address is perhaps the most striking compact summary of his long constructive scientific career. From the point of view of general semantics there is very little, if anything, I can add or reformulate, besides endorsing practically sentence after sentence as they stand. Here we find outlined, in fact, the very problems we have been dealing with in practice through the formulation and application of a non-aristotelian system for many years.

Professor Thorndike rightly asks that scientific methods should be applied to human evaluations. But once this scientific methodology is formulated *it turns out to be an extensional* non-aristotelian system *based on asymmetrical relations involving 'more', 'less', etc. In an aristotelian system, in which both the similarities and differences of predicates give us merely symmetrical relations, we can not have a workable theory of* evaluation. *We have a structural parallel in science; for just as modern mathematics and physics could not have happened within the limitations of the euclidean and newtonian systems, so within the limitations of the aristotelian system a theory of values, and therefore a theory of sanity in the modern world, could also not have happened. The understanding that something desirable should happen is not enough; we have to have workable methods and techniques to bring about the desired results.*

Professor Thorndike's paper is reprinted, with his kind permission and that of the editors, from Science, *January 3, 1936.* ALFRED KORZYBSKI.]

A WISE custom recommends that this address be upon some topic in which substantial recent advances have been made and about which your retiring president is especially competent to speak. I have, nevertheless, chosen a topic about which very little has been learned in the past decade and in which I am not expert. The reason is that the topic is important for workers in all sciences, and is especially important now. You will all agree that wisdom in the wants and valuations which are the prime movers in human affairs has not kept up with knowledge of the brute facts of human nature, much less with knowledge of the lower animals, plants and inanimate nature. Foes of science are asserting, and some of its friends are admitting, that science is incompetent to improve the judgments of value and esteem which rule men. On the other hand, certain alert students of government, law and morals are suggesting that what is needed in the treatment of questions about good and bad, right and wrong, useful and harmful, is the matter-of-fact curiosity of science. So I invite your attention to some facts of the psychology of values, as I see them.

The facts about valuation have been much discussed under the title of 'Ethics' and 'Esthetics' by thinkers of philosophic temper. In spite of the great acuity and scope of their intellects, their efforts to devise general theories of the good or of the beautiful or of what men ought, and what they ought not, to enjoy have been unsatisfactory to philosophers

as a whole, and rather mystifying or empty to men of science. Nor do they seem to profit by the general advancement of knowledge. Aristotle's solutions seem as good as Hegel's. Being extremely able men, they often propose ideas of great interest and influence, as do great poets and great theologians. But in cases where these ideas concern matters of observable fact, the observations and experiments of working scientists have often disproved their brilliant conjectures. To become a disciple of any of them in other matters is then risky. Their royal roads to knowing what is the right thing for each creature to do in each set of circumstances by learning what 'The Good' is do not fulfil expectations.

Among the doctrines upon which they do show a high percentage of agreement is one which, though obviously true when taken advisedly, is likely to be a barrier to useful thought about valuation. That is the doctrine that the science (or superscience or meta-science) of ethics can be sharply distinguished from such natural sciences as biology, anthropology and psychology, since it is a normative science, telling what should be or must be, instead of describing what is and predicting what will be.

This doctrine is useful as a reminder that judgments, that health, honesty and herrings are valuable differ from judgments that the Klebs-Loeffler bacillus causes diphtheria, that cheating in school children is negatively correlated with intelligence or that herring eggs will become herrings only under certain conditions. But it may do harm by encouraging us to argue and worry unprofitably about whether law, government and education can be sciences and what sort of sciences we should try to make them be. It may also frighten workers in the sciences of man away from observations of and experiments with values, and restrict them to studying only those parts of a man which he uses as materials and tools to satisfy his wants, neglecting the wants themselves.

Values vs. Mere Existence

Just what is the real and operative distinction between judgments of value or worth and judgments of fact or existence? Do the former concern categorical imperatives which are not amenable to the observations and experiments and predictions and verifications of the natural sciences? Must they be revealed by religion or deduced from some theory of a moral universe above or outside of the world of natural events?

My answer is that, on the contrary, judgments of value are simply one sort of judgments of fact, distinguished from the rest by two characteristics: They concern consequences. These are consequences to the wants of sentient beings. Values, positive and negative, reside in the satisfaction or annoyance felt by animals, persons or deities. If the occurrence of X can have no influence on the satisfaction or discomfort of anyone present or future, X has no value, is neither good nor bad, desirable nor undesirable. Values are functions of preferences. Judgments about values—statements that A is good, B is bad, C is right, D is useful—refer ultimately to satisfactions or annoyances in sentient creatures and depend upon their preferences. Competent students judge the existence of things by observations of them; they judge the values of things by observations of their consequences.

Values appear in the world when certain forms of preference appear, when certain animals like or dislike, enjoy or suffer, are contented or unhappy or feel pleasures or pains. They apparently precede learning and knowledge, which work chiefly in their service. Chicks or

rats are indeed in a sense more confirmed moralists than civilized men. They pursue what is good, fit and proper to their minds with a wholehearted devotion. Their duty is often their pleasure also.

In civilized man the variety of the valued and disvalued increases greatly. There are many scales of merit, many points of view from which and in respect to which persons, acts, things, events, can be regarded as desirable or the reverse. One thing may have a score of different positive values and a dozen negative ones. The inborn values of sweet tastes, unimpeded movements, rest after exercise, exercise after rest, courtship and love, etc., are worked over into an enormous structure by the family, school, neighborhood, church, books, laws, and other man-made forces. Man acquires multifarious customs and traditions about values. Thus certain acts are good or right because they satisfy the tribal gods; others are so because they minister to the happiness of ancestors long since dead; others are right, one knows not why. Opinions about values become diverse and conflicting.

In assigning values on the basis of consequences, we may and do attach various weights to the consequences for ourselves, our friends, white men, black men and yellow men, sane, insane and idiotic men, dogs, horses, tigers and snakes, living men, the spirits of dead men and men yet to be, the God of our fathers and other gods, in case we recognize such at all. We also attach weight to remote and indirect consequences, for example, by way of the example set to others. There is also a large margin of guesswork, especially about what the consequences will be for the satisfaction of men of the distant future and men unlike ourselves. Opinions about consequences are also largely second-hand and conventional. The ratings by consequences are, however, always justified in the end by satisfactions or annoyances for some sentient being, if they are justified at all.

Alleged Absolute of Transcendental Values

We can choose whose satisfactions we shall give weight to and what sort of persons we shall esteem; the two amount to essentially the same. But if sane and intelligent, we rarely attach value to something which makes no differences, directly or indirectly, to the satisfactions and annoyances of any sentient beings.

When certain moralists and theorists who are sane and highly intelligent give us the notion that they assert that certain qualities and acts can have an absolute intrinsic value, regardless of any satisfaction or annoyance to any sentient being, they or we (or both) are probably confused by analogies or verbal subtleties. It is to be observed that the qualities and acts alleged to be thus justified by their mere nature are easily justifiable as ministrants to real desires and aversions.

The commonest cases of alleged absolute values, irrespective of any satisfaction or annoyance to any sentient being, are truth, beauty and the development of perfection of human powers.

The truth, in the sense of those ideas about reality which correspond to it, enable us to predict it and lead us to adapt ourselves to it and to wants which are satisfiable by it, is a pure good. Anyone can possess it at no cost to anyone else and often to their enrichment; an increase in the amount of it available for men or in the amount of it possessed by an individual is, in and of itself, an aid in the satisfaction of other wants, and interferes with none of them. Whatever is an essential conflict with it is bad. Whether it has any more absolute warrant for commanding our regard we need

not inquire, since even by the most empirical and utilitarian, or by the most metaphysical and supernaturalistic, theories it is valued as among the highest things a man may seek.

Beauty in the sense of that which causes unselfish, impersonal and noble enjoyment, free from exaltation of one at the expense of another's degradation, from use by one at the expense of another's deprivation, from taints of bestiality, meanness, stupidity, and the like, also ranks very high in any reasonable scheme of values. To make or to enjoy a poem that is fine satisfies good or at least innocent wants in the poet and his readers, without, in and of itself, reducing the satisfaction of any one else.

Creating and enjoying truth and beauty are samples of the class of satisfiers which involve positive satisfactions for some without subtraction from, and often with addition to, those of others. Enjoyment of the happiness of others is a third member of this class, and good health is a fourth. Other things being equal, such are obviously on the average better than what may be called the possessive or exclusive satisfiers, such as eating, ownership, supremacy or victory, where the satisfaction of one involves the deprivation of others. They are also samples of the dignified, as opposed to the trivial or mean satisfiers, such as chewing gum, scratching one's head or watching a dogfight. They have fine consequences and fine affiliations; and these are enough to guarantee them without assuming any absolute or transcendent quality in them.

The doctrine that the perfection of human powers furnishes a general criterion and rule for valuation was probably invented and maintained because of the belief that there must be some one adequate universal criterion, and the fact that to be perfect, to be the best of a certain sort or series is very often good. Since some powers, such as to deceive, defraud, terrify and torment, are obviously better restrained than developed, the limitation, harmonious, is often inserted. Powers whose perfecting is undesirable can then be excluded as being out of harmony with those which the theorist thinks are better.

There need be no one universal criterion, and the idea of perfecting is of little real value save as a suggestion that the good life of any creature depends upon what kind of creature he is. The addition of 'harmonious' brings the practical applications of the doctrine back to a calculus of actual wants and satisfactions of sentient beings and their interrelations.

Values then reside in satisfactions and annoyances of sentient beings. In so far as these lie within the natural world of men and animals, they are amenable to scientific study. In so far as we think reasonably, not by prejudice, wishful delusion or chance, we judge the values of things, events and relations by their consequences. We also sometimes judge them indirectly by their affiliations. The theory and technique of estimating the value of a thing by its affiliations—by what it goes with—is important, but I lack time to explain, illustrate and justify it, and to show its proper uses, dangers and limitations. The value of any given fact to any given group is, in so far forth, a natural fact like the smell or taste of any given chemical to any given animal. Values are not banished entirely from the realm of science into some exalted sphere. Facts, principles and laws about values differ from facts, principles and laws about time, distance, area, volume, mass, temperature, chemical constitution, memory, dreams, knowledge, prices, diminishing returns, laws, customs, myths, taboos, family organization, etc., not fundamen-

tally and utterly, but in the very important features which I have described.

They are amenable to the methods of science. But they are often much harder to determine, since they depend upon knowledge about sentient beings, present and future, their wants, the right weights to attach to each of these, and the consequences of the act or fact in question to each of them. As a result, there is a very wide variation in the common-sense knowledge which science starts with and seeks to improve. The variation in the weights given, often unconsciously, is especially influential. In the actual genesis of moral judgments one of you may, and probably does, weight the satisfaction of himself and a dozen of his family and friends above those of all the worms in the world; but some St. Francis or Brahmin may not. The saint may weight the satisfactions of any other Christian as equal to his own, but the average sensual man does not. The abstract thinker may give substantial weight to the satisfactions of the human species in 3000 A.D., but these vanish in the valuations of most men. Such habits and attitudes acquired and used in ordinary life are hard to exclude when one tries to judge impartially as if he were a trustee for the welfare of the world or a purely scientific solver of the world's problems.

The Assignment of Weights

Assuming that all human beings, present and future, are to be considered, how should an impartial student, a trustee for the welfare of all, assign weights? His criterion will be, as always, the consequences.

If the satisfaction of a certain want (say for food, or for power, or for approval) in A bids fair to cause great benefit to all men, whereas the satisfaction of the same want in B bids fair to cause little, he will weight A's want much more heavily than B's.

When it is not feasible to learn what the consequences of weighting one person's satisfactions more than another's will be, our trustee for humanity will do well to weight the wants of good men more than the same wants of bad men, since there is a probability that the gratification of wants will cause both to maintain or increase their customary activities.

Goodness and intelligence are positively correlated: so he will for the same reason do well to weight the wants of intelligent men more than the same wants of dull men.

He will do well to weight the wants of the men of 1950 above the same wants in the men of 2050, unless he has reason to suppose that the latter will be better men than the former, for there may be no men in 2050, and if they are, they may, some or all, lack the want in question. He will, however, give far more weight to the men of 2050 and 2150 than statesmen do or than most philanthropists have ever done.

Ethics, politics and philanthropy have been guilty of neglecting individual differences, partly because doing so simplifies all problems, and partly because of the retention of theological and sentimental prejudices in favor of the similarity and equality of man.

No egalitarian system of weights can be just or wise. More weight should be given to the wants of superior men than to the wants of inferior men. What able and good men want is much more likely to be better for their community or nation or race or the world as a whole than what stupid and bad men want. Providing for their wants will presumably enable them to do more of what they want to do; and this will improve the world and its customs for future residents. Other things being equal, it should lead them to

have more offspring, and this will improve the world by increasing its percentage of good men.

It is of special importance to attach great weight to the wants of those individuals who have eminent abilities in the impersonal activities of art, science and the management of men. What such persons want will be largely time and freedom to do their work in, tools to do it with and conditions enabling them to do their best. They will doubtless sometimes want what is not good for their work for the world; but their judgment will on the whole be a good guide when knowledge of consequences is lacking.

It seems probable that the harmful vagaries of men of genius in the fine arts would have been much reduced if their cravings for untrammeled expression in art itself and for approval of their real merits had been more fully satisfied. It also seems at least possible that the ruthlessness and selfishness of some men of genius in business and government would have been reduced if they had been given power more and been less required to extort it by force. Even if these creators continue to seek occasionally eccentric, ignoble or ruthless satisfactions, it will still be an excellent bargain for the world to attach great weight to their wants as a whole. The world's greatest folly has been its treatment of those who are most superior to it in intellect, originality, sensitiveness and humaneness. Its most prudent investment is to find them out early, and give them whatever they need to do their perfect work. One good clue to what they need is what they themselves desire.

Human Wants

The work of a science of values, a realistic ethics, is to learn what men do want and how to improve their wants, and to trace the consequences of acts, events, ideas, attitudes, etc.

What are the fundamental and dependable satisfactions of life for man? A leading psychiatrist answers, 'Love and security.' But a student of boy's gangs may think that 'Conflict and adventure' is as good an answer. The philanthropists of the early and mid nineteenth century thought that men would be satisfied if they and their children were without hunger and pain, able to read, with regular work ten hours a day and freedom to think and vote as they liked. Cynics of the twentieth century doubt whether people in general really want liberty and culture as much as beer and excitement.

I have no satisfactory answer, and no time to state the provisional answer which anthropology, psychology, sociology and the other sciences of man suggest. I shall instead report one small bit of evidence concerning what the inhabitants of this country want.

We do know fairly well how the population of this country spent their incomes in 1929. Using the figures given by Lynd and supplemented by Dr. Ella Woodyard, we have 17 billions for food, 8 billions for clothing, 6½ billions for automobiles, and so on through thirty items like a billion and a half for laundry, cleaning and dyeing, over a billion and a half for tobacco, to three quarters of a billion for death and burial.

The payment for food satisfies chiefly hunger, appetite and the want for sweet and savory tastes, but also in part the craving for social enjoyments, for the approval and esteem of others, for protection against disease. Payment for physicians is chiefly protection against disease and pain, but it also helps to satisfy the more general cravings for security, comfort, self-respect and the approval of others. Laundry bills represent the satisfactions of self-respect and social approval, pro-

tection against disease, pleasures of sight and smell, and others also.

By the aid of a consensus of psychologists, I have divided each item of our people's expenses among the wants to which it probably ministers, and then combined the results into a list of wants and the amounts paid for the satisfaction thereof. The outcome will suffer from whatever constant errors afflict psychologists to-day, but this inventory of wants satisfied from income is at least a step in the right direction. I shall not present it in detail, but only by samples. According to it:

Our bill for food is spent as follows: 56 per cent. to satisfy hunger; 15 per cent. to gratify the pleasures of taste and smell; 10 per cent. for the pleasures of companionship and social intercourse, including courtship; 3½ per cent. for the approval of others, and smaller percentages for protection against disease, protection against cold, enjoyment of the comfort of others and the pleasures of vision.

Our bill for clothes is spent (according to the psychologist's distribution): 41 per cent. for protection against cold, heat and wet; 6¾ per cent. for protection against animals and disease; 12½ per cent. for the approval of others; 7 per cent. for self-approval; 10 per cent. to gain pleasure in courtship and sex activities; 8 per cent. for other social intercourse; 6 per cent. for pleasures of vision; 3½ per cent. to win mastery or domination over others, and 2 per cent. to win their affection.

The 700 million dollars for cosmetics and beauty parlors is spent about one seventh for the pleasures of sight and smell, one fourth for the pleasures of sex and courtship, one third to gain general approval from others, one eighth to have inner-self-approval, and about one tenth to secure mastery or domination.

When the entire annual budget is thus transformed item by item into a budget for the satisfaction of human wants, payments for sensory pleasures, security, approval of others and the pleasures of companionship and sociability (including romance and courtship) are in each case close in magnitude to the amount paid for freedom from hunger. In fact, we pay more to maintain self-respect and the good opinion of others and avoid scorn, derision and shame than to keep our bodies fed and free from the distress of hunger.

We pay more for entertainment (including the intellectual pleasures and the sensory pleasures of sight, sound, taste and smell) than for protection against cold, heat, wet, animals, disease, criminals and other bad people, and pain.

Less than one third of what we spent went for wants which must be satisfied to keep the human species alive and self-perpetuating. The rest went chiefly to keep us amused and comfortable physically, intellectually, morally and especially socially.

Relatively little is paid for the satisfactions of the intellectual life. The psychologists consider that the payments for private schools, books and magazines are often for prestige, power and other practical satisfactions, and do not credit the theaters and movies of 1929 with much intellectual appeal.

The psychologists do, however, pay us the compliment of crediting us with spending twice as much from good will to man as from fear of criminals and other bad men, and of spending at least as much to win the affection of our fellow men as to have the pleasure of bossing them.

In tracing the consequences of ideas, acts, laws, customs, inventions, etc., both the biological and the social sciences have somewhat neglected the inner or

mental wants of men. Nourishing food, hygenic housing, medical care, relief from bodily pain and fatigue have, quite naturally, been emphasized. But inner peace, contentment, a sense of personal worth, surety of friendship and affection, the absence of fear, the presence of a good conscience and other states of mind are also real and important.

Many features in religion, caste systems and other folkways which seem undesirable to us did have the merit of satisfying some of these deep inner needs. If we abandon such folkways on the ground that they are deceptive and unjust, we should replace them by something true and just which gives equal comfort, dignity and flavor to the inner lives of men. Doubtless it is better to be a dissatisfied Socrates than a satisfied pig; but also it is worse to be a dissatisfied coolie than a satisfied coolie. Most discontent is not divine. Not once in ten thousand times will becoming dissatisfied cause a coolie to become a Socrates. Some inner conflicts, miseries and rebellions are good, if not for the man's soul, at least for his work for the world. But many are not good for anything.

Theoretically, men should face the facts of the world, including all their own weaknesses and follies, make a reasonable adjustment and then live serene in the faith that they are doing their best and that all the good in all the world should and will support them so far as it can. But how can they be taught to do this?

The Improvement of Wants

The desires and aversions of men can be changed as truly as their ideas and habits, though not as much or as easily. The same forces of repetition and reward that strengthen tendencies to think and act operate upon tendencies to like and dislike. If a certain attitude can be made to occur in a person in connection with a certain situation, and if he is led to regard it as fit and proper in that connection, he will 'learn' to take that attitude to that situation just as he learns to think 'ten' in response to 'seven plus three.' In strengthening good wants and in attaching desire to good objects, there are, however, difficulties and limitations which are absent in the more neutral unprejudiced sphere of ideas and skills. Experiments in changing wants, interests and attitudes do not justify the fond hopes of certain doctrinaires in sociology and education, but they do guarantee that, if sound methods are used, men can be taught to find satisfaction in useful work, healthful and noble recreation and the welfare of others, to a degree that the world has never seen.

What is known concerning the inheritance of moral traits in man and the lower animals encourages us to hope that the inborn cravings of men may be improved at no cost to other goods.

Tracing Consequences

The consequences of events, especially of the ideas and acts of men, to the satisfactions of mankind, need study by all the the sciences of man and nature.

Non-scientific estimates are sadly untrustworthy. The national prohibition of the sale of alcoholic liquors did not have the consequences which millions of people expected who worked to attain it. Who knows what its consequences would have been if the work that attained it had been quadrupled to secure its enforcement? Among all the consequences, beneficial and ruinous, blessed and dire, which were expected from the granting of votes to women, which were real? People accept guesses and follow the unconscious logic of hope and fear in estimating consequences, perhaps because

they feel that good intentions are the important requirements.

People also naively expect that everything will stay the same except what is changed by direct action upon it. Nine persons out of ten, and possibly ninety-nine out of a hundred, assume that the general features of civilization which are stable in their experience will remain so. Roads, schools, policemen, houses, beds, payment for work, a chance to buy what you want if you have the purchase price and a hundred other commonplaces of our social order will continue like the sunshine or rain. So they think.

To think anything else is almost a psychological impossibility for the ordinary man of this country today. He does not realize that these features of his life depend upon an extremely complex structure of ideas and acts of rulers and ruled, employers and employed, parents and children, borrowers and lenders, and are kept in condition by an equally complex structure of customs and laws. He has no more fear that any act of his or anybody else will stop railroad trains from running than it will stop the sun from shining. Laying a tax on incomes is to him like digging a ditch that diverts the rain from one place to another. He does not have the slightest fear that it will have any effect on the amount of income. Why should he? To do so he must reason, and reason against habit and experience. Only exceptional minds do that.

Scientific ethics must rely largely on economics, political science, sociology, psychology, education and biology in studying the values positive and negative of all sorts of activities; for example, paying prisoners full wages for their work, keeping criminals under surveillance by parole officers instead of incarcerating them, legalizing divorce when both parties desire it, encouraging birth control by the weakly, dull and psychopathic, taking property by force from the rich and giving it to the poor, trying to make one's own community or nation wax rich and strong at the expense of others by tariffs and quotas, and other moral or semi-moral issues, where action is now unfortunately being taken largely as a result of the emotional interests of enthusiasts or the selfish interests of special groups.

This lays a heavy burden upon these sciences, and cautious workers will be reluctant to take it on. Questions about consequences to human welfare are often confused by conventional interpretations of welfare; one is tempted away from fundamental inquiries which are really important to superficial questions which seem important to the public; the basic facts are often lacking; devising ways and means to secure trustworthy observations is very difficult; even after heroic labors, the solution may have a disgustingly wide margin of error.

So science has been rather willing to leave values alone. So psychologists rarely study the causes of happiness, economists recoil from all wants save those expressed in money prices, students of education deal with the consequences of school work upon abilities, but not, save rarely, upon desires and satisfactions. So we all have left and still tend to leave decision about consequences to humanists—to philosophers, sages, men of affairs, historians and literary men.

Some of the humanists would gladly accept the responsibility, being confident that science should leave such decisions to them. They distrust the activities of the social sciences and especially their entry into the field of human values. It it better, such a humanist will assert, to listen to the seers and sages and to follow the dreams of inspired artists and moralists than to poke about in the schools, streets, market-places, prisons and asylums, or collect statistics, or drag

human aspirations into the laboratory.

We may reasonably think that it is better to do both. We should admit that Thucidydes reports a better description of liberty than the average Ph.D. candidate in political sicence to-day would give. If we had to choose between reading Sophocles and Euripides and reading the most scientific family budgets, we would reject the science. We would have science gladly learn and gladly teach what able men have thought about the consequences of various forms of conduct, but we would also have it test and experiment, regarding nothing as outside the scope of science.

Much of the scorn of certain humanists for the efforts of modern science seems to be due to the fact that the observations and experiments of scientific workers make dull reading. A cardinal virtue of these humanists is to be interesting; many of them are literary men to whom success in entertaining cultivated persons is a duty, as well as a source of pleasure and pride. It is partly because of this that we can not trust the humanist alone. We must be suspicious of interest as a guide in any tracing of consequences. The talent for selecting what has a literary appeal may well be wrapped tight in a napkin and buried deep while one is doing scientific research.

We must consider one final objection to using the methods of science in the world of values. Science, according to a very popular view, deals with a fatalistic world in which men, their wants and ideals, are all parts of a reel which unwinds year by year, minor whirls in a fixed dance of atoms. Values can have no place in such a world, and efforts to attain them by science must fail.

The truth of the matter, which is rather subtle, may best be realized by considering what I have elsewhere called the paradox of science, which is that scientists discover 'causal' sequences and describe the world as one where the same cause will always produce the same effect, in order to change that world into a form nearer their heart's desire. Man makes the world a better home for man and himself a more successful dweller in it by discovering its regular unchangeable modes of action. He can determine the fate of the world and his own best, not by prayers or threats, but by treating it and himself by the method of science as phenomena, determined, as far as he can see, by their past history. The only safe way he finds to gratify human wants and fulfil human aspirations is by learning the regular predictable modes of action of nature, especially those which relate to these wants and aspirations. The more fully he can turn the world into a progression of events devoid of chance, unswerved from its onward march by any magic, the more he can control it. If man should know himself as fully as he knows the chemicals he puts into a test-tube, so that he could predict the exact reaction he would make to any situation, he would be better able to control and improve his own future than any race of men or gods has ever been.

A deterministic world of science is the least fatalistic world there can be. A world entirely ruled by the wishes of deities external to it would be utterly fatalistic. It would present a far more hopeless determinism than the determinism of science, for human access to and influence upon those forces external to nature would be difficult and of doubtful avail, whereas the nature we live in and are parts of we may hope to influence.

The solution of the paradox lies in this last fact. Men are parts of nature. They and the scientific knowledge they acquire and the choices they make are on the reel, in the dance of atoms, among the marching events. Their wants and aspira-

tions can determine nature's future because they are determined by nature's past. Everything that man is and does influences nature. Any ideas men have influence it. The knowledge of it as a complex of the regular 'determined' sequences described in the so-called 'laws' of science is the force that man can use most advantageously in changing men and the rest of nature to fit human wants. If and as the world is determined, there is hope of controlling it in the interest of human values. Every regularity or law that science can discover in the consequences of events will be a step toward the only freedom that is of the slightest use to man, and an aid in the good life. If values did not reside in the orderly world of nature, but depended on chance and caprice, it would be vain to try to increase them.

Are there any valid reasons why the methods of science should be abandoned in favor of either philosophical arguments or intuitional conclusions when one passes from facts of existence to facts of value? We have found none. It is certainly undesirable for men of science to restrict their thinking to what is and what will be, leaving to propagandists and reformers and talkers the decisions about what ought to be. Is any group of thinkers qualified to study the wants of mankind, the consequences of acts and events, and the improvement of human valuations without reliance on the facts and methods of anthropology, psychology, sociology, economics, government and other sciences of man? Can science avoid the responsibility of trying what impartial curiosity and honest work can accomplish in this field of controversy and prejudice?

The world needs the insights and valuations of great sages and dreamers. It needs the practical psychology of men of affairs, leaders in business, government and education. But it also needs scientific methods to test the worth of the prophets' dreams, and scientific humanists to inform and advise its men of affairs and to advise them not only about what is, but about what is right and good.

GENERAL SEMANTICS AND MODERN ART

OLIVER BLOODSTEIN[1]

ART is an activity of the nervous system, and a distinctly human type of behavior involving symbols and abstracting. Like other symbolic activities, it carries with it certain implied semantic reactions. Korzybski shows that aristotelian systems such as language and the classical sciences generally imply inappropriate semantic reactions involving identification, confusion of levels of abstracting, elementalism, etc. He proposes a non-aristotelian system in which these semantic disturbances are eradicated by proper linguistic revision, and points out existing symbolic systems such as mathematics, relativity, etc., which are non-aristotelian in nature. The purpose of this paper is to deal with modern art as a non-aristotelian system, contrasting its implied semantic reactions with the implied semantic reactions of the art which preceded it in Europe for several centuries. It is proposed to regard the traditional European art as an essentially aristotelian system involving identification, etc.

[1] Mr. Bloodstein is at present serving in the Signal Corps of the United States Army. This paper was written in 1942 when the author was attending Professor Wendell Johnson's lectures on general semantics at the University of Iowa. The author acknowledges a fundamental debt to Alfred Korzybski, particularly his *Science and Sanity* (second edition; Lancaster, Pa., 1941). The author's military duties have prevented him from supplying, as he would have liked to do in preparing this paper for publication, detailed citations of his sources.

Non-Aristotelian Factors in Modern Art

By the term 'modern art' is meant the highly original art of the past fifty years, usually associated with the 'School of Paris', including such movements as 'post-impressionism', 'fauvism', 'cubism', and such painters as Cezanne, Seurat, Picasso, Matisse, Derain, Van Gogh, Gauguin, etc. By the 'traditional' art is meant, in general, the art of Europe from Hellenistic times to the latter part of the nineteenth century (with the notable exceptions of the Byzantines, Giotto, Michelangelo, El Greco, Rembrandt, and Daumier). Familiar examples of the so-called 'traditional' art are the works of Da Vinci, Raphael, Watteau, Gainsborough, Sargent, the 'impressionists', etc.

The search for non-aristotelian factors in modern art is justified, on purely theoretical grounds, by historical considerations. The modern movement is a reaction from a kind of art which existed from Aristotle's time onward, in a geographical area which was notably Aristotle's sphere of influence, namely, the continent of Europe and the great centres of Western civilization. Before Aristotle, European art, as exemplified by archaic Greek sculpture, Minoan hand work and neolithic carvings and cave paintings, was very similar in purpose, spirit and appearance to modern art. The same is true of all art outside of Europe during the period of

Western culture. The Chinese, Japanese, Persian, Indian, Egyptian, and African art traditions, to mention the principal ones, are similar to the modern tradition, and have provided much of the impetus to the modern movement in Europe at various states of its development. In fact, Western art prior to 1880, an art so familiar to most of us that we tend to regard departures from it as 'abnormal', is an isolated offshoot from the main stem of world art, representing a degradation of pure visual art by extraneous aims and ideals.

Aristotle said, 'Art is imitation of nature'. Until about 1880 this dictum represented one of the chief aims of leading artists. The result of this attempt to be faithful to 'reality' was an increased emphasis upon objects, in and for themselves, in the belief that they represented 'nature'. Thus, European art became an art of content, or subject matter, dominated by an attitude of 'allness' resulting from the identification of the artist's particular level of abstraction with 'reality'.

The artists who, in recent years, broke with this tradition, abolished the old semantic reactions involving identifications. The art they established, or rather reestablished, is based on non-aristotelian semantic reactions.

Modern art is based on consciousness of abstracting.

It considers structure, relations, order to be the only content of art.

It rejects identity.

It accepts the principle of non-elementalism.

It is based on extensional methods.

Thus, the implied assumptions underlying modern art are consonant with the metaphysics of existing non-aristotelian systems. An eminent writer on modern art, who recognizes that 'words are at best bungling in the realm of experience' states:

> The new philosophies start with two essentially Modern conceptions: that life is not static, perfectable and statable, but an evolutionary growth, change, a progress; that relatedness rather than isolated individuality is basic. The new physics begins not with solids, the tangible, but with movement, spurts of energy; and it recognizes a basic relatedness of all phenomena, material or organic; the fields of investigation, electrical, gravitational, etc., tend to merge into one. Modern painting . . . likewise arrives nearer to an understanding of basic principle by study of dynamic relativity. The unity of the creative picture grows out of a poised inter-relation of potentially energetic volumes, each with weight and direction exerting stresses on all the others—they in turn exerting a combined pull on it.

Modern art is thus based on structural relations. Finally, being based upon revised, non-aristotelian assumptions, modern art demands new semantic reactions on the part of the spectator. Popular aversion to modern art, like popular inability to 'visualize' four-dimensional space-time, is due to the persistence of old semantic reactions. The appreciation of modern art thus involves education in new, non-aristotelian semantic reactions.

Symbolization in Art

Semantic reactions are responses to symbols in connection with meanings. These symbols are usually words, but other events may serve as symbols in various situations, and on the macroscopic level we continually respond to symbols which are not words. In painting and music, and certain other forms of art, non-linguistic symbols of a very high order of abstraction play a part. There is nothing strange or unusual about this. Words themselves, although we differentiate them from the

events on the unspeakable level which they symbolize, are events on the unspeakable level, being a joint product of accoustical energy and auditory perception, or of light-wave energy and visual perception. Symbols are differentiated from the ordinary run of events by their peculiar use to man. Verbal symbols are associated with the functions of acquiring knowledge and of time-binding. The symbols of art serve other functions peculiar to man.

In painting, the symbols usually consist of oil colors applied to sheets of canvas by strokes of a brush. Like verbal symbols, these areas of paint have referents on the objective level. These referents, like those of verbal symbols, are either external objects or internal 'feelings'. In many ways the symbols used in painting are less arbitrary, more direct, than the symbols of language. John C. Mergener of the Psychiatric Institute of the Illinois Research Hospital in Chicago describes the use of finger-painting as a therapeutic device with psychotics:

> After several hours of painting in silence these patients project many of their problems into the pictures and designs they produce. They are literally forced to utilize a simpler symbolism, free from many of the harmful semantic reactions related to the linguistic symbolism.

In spite of this apparent simplicity of art symbols, however, in art as well as in language inadequate orientation may produce harmful reactions, such as the signal reactions of the enthusiastic gallery goer whose mouth 'positively waters' at the sight of a certain painted dish of fruit. Just as we must be aware that words are not the objects on the unspeakable level, we must be able to differentiate between paintings and events on the undepictable level. Paintings are not the things they symbolize.

Art and the Process of Abstracting

The French archaeologist Piette is quoted by H. G. Spearing in *The Childhood of Art* as saying,

> Man had to make a great effort of genius when creating pictorial art. To represent solid objects by lines on a flat surface is not the idea which would naturally first come into his head. The art of sculpture led him in Solutrean times to bas-relief, and that led him on to making incised lines, and thus in the succeeding period he learned to draw.

Spearing comments that Piette's grand generalization . . . 'has not been found applicable to all cases', but he makes the interesting statement,

> In truth, drawing on the flat is not the most obvious and natural way of representing solid objects. Even in simple outline drawing we have to come to a common understanding or convention that certain lines mean certain things. Such an agreement is not easily arrived at, for solid objects are not as a rule bounded by hard and fast lines.

One finds a surprising illustration of this in Savage Landor's book *Alone With the Hairy Ainu* (London 1893). Landor describes an incident which occurred when he visited the chief of a certain Ainu tribe. The author undertook to paint the chief's portrait. When it was finished Landor showed it to him.

> 'Very pretty, very pretty, sir' Benry exclaimed with perfect self-assurance; but when I asked him what he thought the sketch represented, he cut me short by saying that I had done the picture and I ought to know what it was meant for; he did not. His friend agreed with him.

Art, even on the most nearly imitative, or representational level is thus seen to be

a process of abstracting, involving a considerable degree of leaving out and adding of details. This fact is of great significance, and gives us an important criterion for evaluating the imitative art from which we have broken away. Painters of the old Western representational tradition did not realize this, and so their paintings became futile attempts to record the exact appearance of 'reality'. In the nineteenth century the camera appeared, and since it produced an even more accurate image of nature, many painters, identifying the photograph with reality, strove to simulate photographic effects in their paintings. There were few, however, who had begun to realize that not even the camera, much less the human organism, could reproduce 'reality' exactly as the eye perceived it. They saw that art could never hope to be more than an abstraction of nature. The tendency of these artists, especially of Cezanne, Seurat, Van Gogh, Gauguin, and several other early moderns was to differentiate their paintings sharply from the subjects they painted, and to abstract frankly from nature. Another impetus to this movement was provided by modern physics and chemistry, which had begun to reveal that the 'reality' which painters had sought for so long to copy was itself a relatively high order abstract of events on the submicroscopic level. In science, these discoveries opened up a path of investigation which led from the objective level through abstraction to high order inferences, where the connection was made with reality on the lowest levels. In art, these discoveries stimulated the parallel development of a process of abtsracting leading to a kind of intuitive higher order inferences as to the fundamental structure of reality. Whereas the older painters had tended to identify their paintings with the objects painted, and to assume that these objects constituted 'reality', the moderns based their art on consciousness of abstracting, emphasizing particularly the personal, or 'to me' character of the process. Thus, their paintings came to express their personal, intuitive feelings of the 'essence' of the subjects they painted. This is the fundamental meaning of 'abstract' art. Sheldon Cheney writes:

> 'Abstraction' is defined as 'an idea stripped of its concrete accompaniments'. An 'abstract' is the 'essence' or 'summary'. To express this idea or essence or summary, perhaps without resort to nature's casual arrangements, disembarrassed of inconsequential concrete detail, is a first aim of the Expressionist.

We have seen that modern art rejects identity. Identification, however, still marks the reactions of most spectators of modern art. This is evidenced by the typical response to an abstract painting, 'What "is" it?' When the spectator is told that a certain arrangement of overlapping rectangles 'is' the art-dealer Kahnweiler, he automatically identifies Picasso's highly abstract composition with his notion of the person of Kahnweiler, with ridiculous effect. Thus does the 'is' of identity play havoc with our orientation to modern art. The creative art of the twentieth century is based upon a conscious differentiation of levels of abstracting. A corresponding consciousness on the part of the spectator is required before he can expect to 'understand' this art.

Structural Considerations in Modern Art

The non-aristotelian system of Alfred Korzybski accepts order, relations, structure as fundamental. Here we have another criterion for the evaluation of art. European art was for centuries an art of content. There was some attention to 'composition', or 'design', but structure in art was mainly accidental; the energies of the painter were concentrated on the sub-

ject matter, its likeness to nature, and its sentimental, literary or associative value. Modern art looks upon subject matter as incidental, and accepts as fundamental what is variously called 'significant form', 'expressive form', plastic form', 'formal organization', etc. An examination of the contexts in which these terms appear must convince us that what is meant is 'order', 'relations', 'structure'. Cheney writes,

> Order is the first principle of the universe—'Heaven's first law', modern science's final explanation, and a foundation of all art . . . The farthest thing glimpsed by vision-gifted artists at present is a sort of order that we call form. It may be called an echo of the finally satisfying cosmic rhythm, a crystallization in little of the universal architecture (the mystic's view); or it may be subjective revelation of an image born to an artist out of the contact of his individual sensitivity with 'life'.

Reginald H. Wilenski in *The Modern Movement in Art* states that the artist

> makes definite organized complete structures symbolizing and epitomizing special instances of his formal experience.

Laurence Binyon in his book on Chinese art, *The Flight of the Dragon,* writes,

> Every picture is a series of ordered relations . . . A study of the most rudimentary abstract design will show that the units of line or mass are in reality energies capable of acting on each other; and, if we discover a way to put these energies into rhythmical relation, the design at once becomes animated, our imagination enters into it; our minds also are brought into rhythmical relation with the design, which has become charged with the capability of movement and of life.

Thus, it is only now, in the light of structure, that we can see the true value of abstracting in modern art. For the high order abstract is 'superior to surface reality only because . . . it is microcosmic, crystallizing in little the architecture of the universe', only because its structure is similar to the felt structure of reality. The value of this extraction from objective reality of relatively pure structure and the rendering of this structure in a plastic medium will be apparent when it is remembered that all our notions of structure are extremely high order verbal abstractions, inextricably interwoven with our notions of 'matter'. In a painting we can be made to 'visualize' structure, to experience it apart from a great many incidental concomitants, and to experience it on sub-cortical levels. Here we must bear in mind some very pertinent remarks by Korzybski:

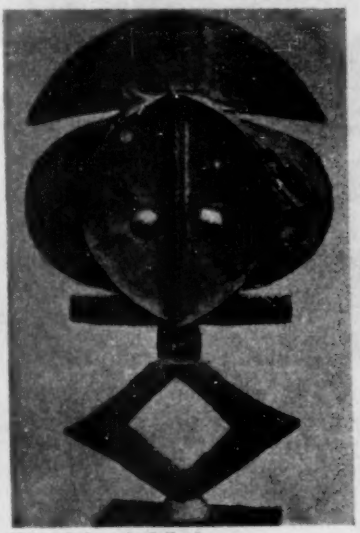
> Immediate experience, always unspeakable, is strictly connected with the lower centres. In the translation of experience into higher order abstractions and language, the un-speakable character of experience is lost, and a new neurological process is needed to re-translate these higher order abstractions into new lower order abstractions, and thus fully and successfully to complete the nervous cycle . . . If the translation is made into the language of lower centres—namely, into 'intuitions', 'feelings', visualizations,'—the higher abstractions gain the character of experience.

By re-translating our higher order verbal abstractions of relations and order into simplified but direct manifestations which can be visualized and felt, modern art affords immediate, sub-cortical experience of essential structure.

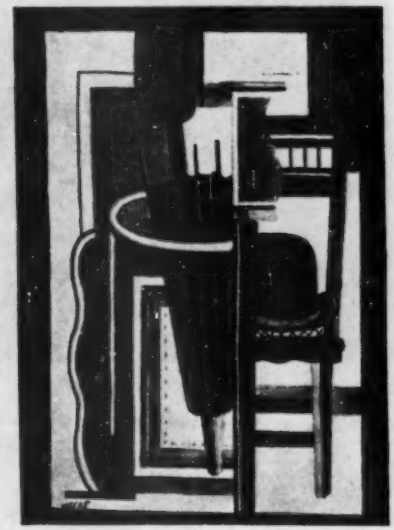
It remains now to define aesthetic structure extensionally. To experience an object in terms of its structure we must divest it of all its functional or verbal 'meaning' and perceive it only as a set of formal relations. Perceiving a chair, we must

JACQUES LIPCHITZ (1891—):
"MELANCHOLY," 1930.

Carl Kjersmeier Collection
AFRICAN WOOD CARVING: MASK
OF DAN TRIBE, IVORY COAST

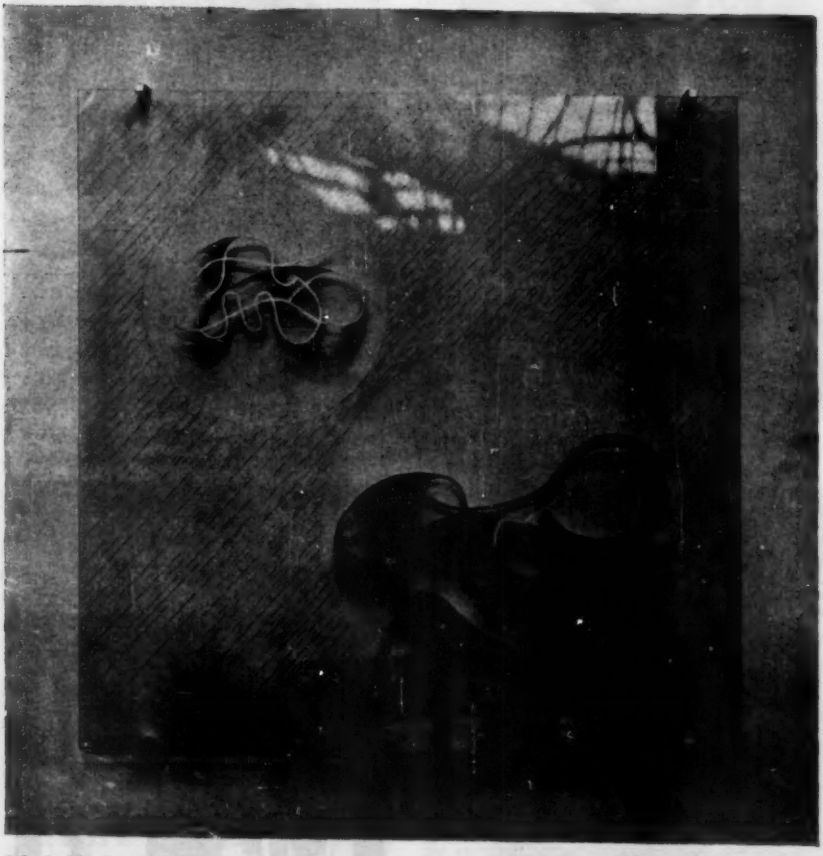


Helena Rubenstein Collection
AFRICAN GRAVE IMAGE:
GA BUN



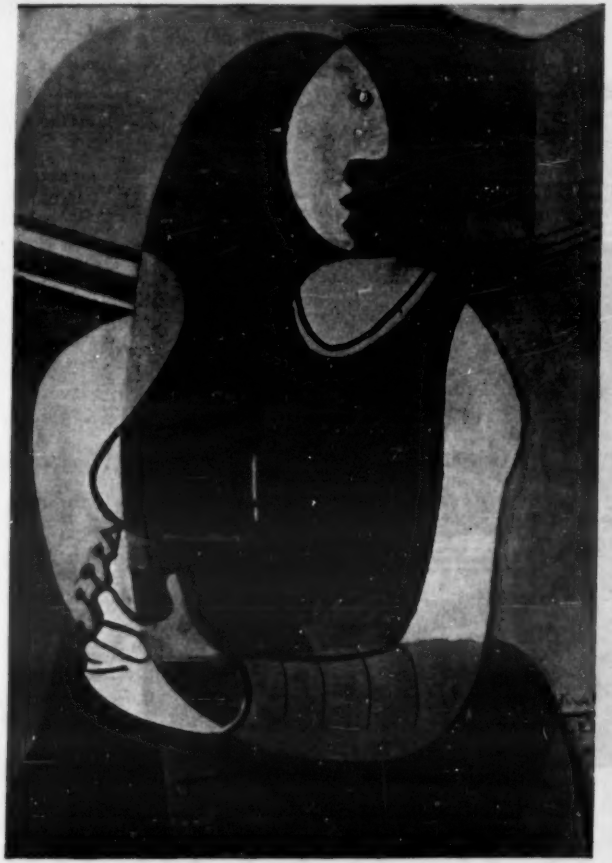
FERNAND LÉGER (1881—):
"COMPOSITION."

Illustrations from Helen F. Mackenzie, *Understanding Picasso* (Art Institute of Chicago and the University of Chicago Press, 1940). Reproduced by the permission and kind coöperation of the Art Institute of Chicago.



School of Design in Chicago

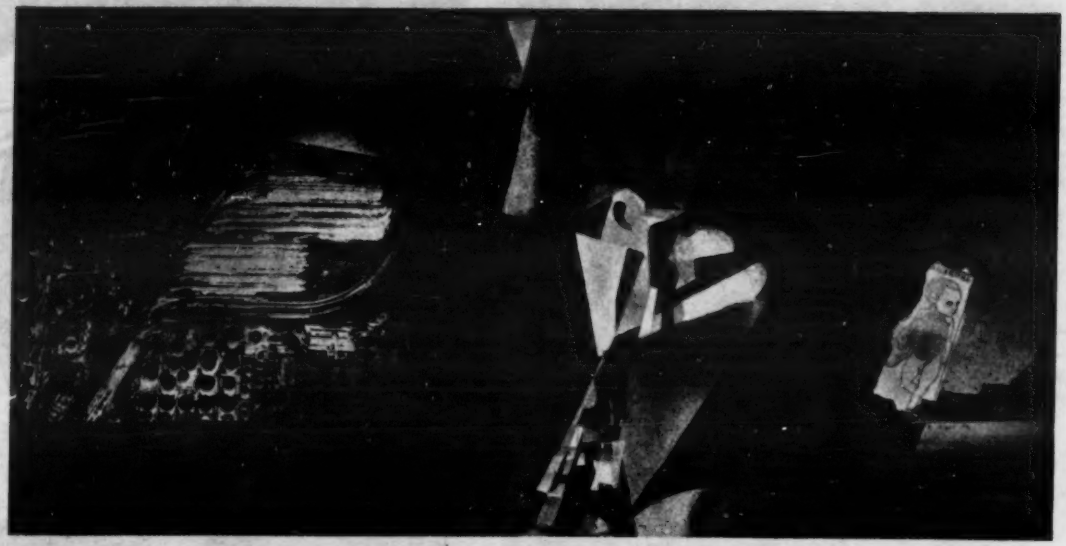
L. MOHOLY-NAGY: "SPACE MODULATOR,"
1940 (PLEXIGLAS).



PICASSO: "SEATED WOMAN," 1927

PICASSO: "PORTRAIT OF KAHNWEILER," 1910.

Illustrations from Helen F. Mackenzie, *Understanding Picasso* (Art Institute of Chicago and the University of Chicago Press, 1940). Reproduced by the permission and kind coöperation of the Art Institute of Chicago.



On exhibit, Art Institute of Chicago, June 11 to October 15, 1943

GYORGY KEPES: "COMPOSITION," 1942.

forget that it is something we 'sit' on. We must try not to respond with the word 'chair'. We must ignore all incidental features of construction, all damages, accidental effects of light and shade, etc. In short, we must respond extensionally, to the object on the unspeakable level. To do this is difficult. It corresponds exactly to Korzybski's description of response on the 'silent' level:

> The reader should try to become entirely 'emotionally' impassive, outwardly and inwardly silent about an object, or a feeling . . . This, obviously, involves a complete checking of affective responses, 'pre-conceived ideas', etc. . . . something very difficult to achieve . . . usually involving a complete reversal of our habitual modes of affective responses.

The extensional and intensional orientations to art correspond respectively to the perception of form and the perception of content, as is so clearly shown by the following passage from *The Psychologist Looks at Art* by Louis Danz, who acknowledges indebtedness to Korzybski.

> The reaction to solid, volume, weight, direction, tempo, cohesion, adhesion, attraction, antipathy, elasticity, gravity, and their rhythms and analogies when emotively used in art is very different from the emotional reactions one has to horse, tree, man, castle, beautiful woman, as represented in picture, stone, or words . . .
>
> The emotional reaction of the ego to subject-matter in a picture might be called an experience by reference and recollection . . . On the other hand, the emotive reaction to structure is a direct and immediate excitation, on the unspeakable level.

Two of the most fundamental revisions which the modern movement has effected in art are closely related to structure. The first of these may be referred to as organization in three dimensions. In the terminology of the new aesthetics 'organization' replaces the older 'arrangement' or 'composition'. The difference lies in the fact that 'composition' is the arrangement of forces in two dimensions, the forces which tend to bring the eyes backward and forward being left to their own devices, while 'organization' implies the conscious arrangement of the forces lying in all three dimensions. Cheney writes,

> Up to the time of the Expressionist development, artists had attained no clear understanding of backward-forward movement in the picture, as distinguished from linear or side-to-side and up-down movement. The movement across the canvas or up-and-down embraces only a beginning of the dynamic or plastic complex, which gains profoundest effect through mastery of thrust and return, within space beyond the picture 'front'. The one is two-dimensional, the other three-dimensional.

Closely related to this is a second structural revision. This structural revision is based on extensional orientation on the part of the artist with reference to his medium, namely, the canvas. Artists have begun to apply to the canvas cloth itself the same structural investigations on the 'silent' level that they apply to the objects painted. Such investigations disclose the 'obvious' fact, unsuspected by European artists for hundreds of years, that the canvas is, on the macroscopic level, a two-dimensional plane, and that any illusions of depth, perspective, etc., constitute a violation of that plane. Determined to start with structural validity above all as a basis for art, modern painters have abandoned all illusions of realistic perspective and extreme scenic depth, and have delib-

erately striven to make the spectator conscious of the two-dimensional surface which a picture 'really' is. There are many techniques for accomplishing this, such as leaving bare patches of canvas in the finished painting, applying the pigment thickly and allowing the brush-strokes to show clearly, arranging all objects in very nearly the same plane without regard to their supposed distance from the spectator, decorating the canvas with two-dimensional designs, textures or arabesques. The painter Gleizes has said,

> Painting is the art of giving life to a surface plane. The picture plane is an organism of two dimensions. Its truth lies in its two dimensions.

Thus, while the older art represented the third dimension for realistic effect but failed to integrate it into the composition, modern art uses it aesthetically as far as it is represented but tends to avoid its too obvious or extensive representation. The result is an absence of life-like perspective, but a surface alive with rhythmic thrust and recession. Cheney relates the two structural principles as follows:

> The sense of the picture plane preserved affords meaning to the thrust and return, the recessive rhythm. The plane provides the stillness that gives significance to the movement.

Educating Appropriate Semantic Reactions to Modern Art

> The theory that art is above all things imitative and representative no longer holds the field with thinking minds, but there is no other theory which has won universal acceptance and which controls the ordinary view; and the authority of Aristotle seems to have left a half-conscious bias in the minds of most of us.

This statement, written by Laurence Binyon in 1911, is unfortunately still true in 1942. We see evidence of this in the continued aversion of most people to modern art. The problem is chiefly one of the tenacity of old semantic reactions. As Korzybski states,

> Any fundamentally new system involves new semantic reactions; and this is the main difficulty which besets us when we try to master a new system. We must re-educate, or change, our older semantic reactions.

Specifically, this means that we must avoid 'signal' reactions to paintings as if they were the objects they represented. This involves the response of the organism-as-a-whole to art as symbols; there must be no physiological identification of painted flowers with 'actual' ones to the extent that we 'smell' them. We must be fully conscious of art as abstracting.

We must be extensionally oriented to modern art. We must react with reference to facts, not words. People who fail to 'understand' modern art are often confused by the words they have been taught to use in speaking about art. We have already seen the difficulty arising from the verbal response 'What "is" it?' Other difficulties arise from the common use of the word 'understand' in connection with art. Thus, an acquaintance of mine responds to a reproduction of Picasso's cubist abstraction 'Three Musicians' with the words 'I can't understand it. Will you "explain" it to me?' The trouble with the words 'understand' and 'explain' is that as used by most people they are highly elementalistic, implying independence of 'intellectual' and 'affective' reactions. The person who uses them ordinarily expects to 'comprehend' modern art on the basis of high order verbal abstractions, far above the level of direct experience. These terms work very well with paintings in which the meaning is literary, sentimental, associative, and generally verbal, but when he

tries to apply them (and their implied notions) to a painting whose 'meaning' is on the un-speakable level, and should be communicated directly to the lower centres, his map no longer fits the territory.

This leads to the importance of extensionalization in our response to modern art. We must learn to respond non-verbally to the canvas itself, the pigment itself, the form itself. Louis Danz writes,

> If you allow a word to form in your consciousness,-you no longer experience the picture but you substitute the word.

An excellent example of extensionalization with reference to art is the following quotation from the writings of Gertrude Stein, who was one of the first to take an active interest in the early efforts of modern painters:

> I looked at all oil paintings that I happened to see and not consciously but slowly I began to feel that it made no difference what an oil painting painted it always did and should look like an oil painting.

This is not mere facetiousness; it is the inability to see this 'obvious' fact that underlies popular failure to appreciate modern art. Before an oil painting can 'look like an oil painting' to most people, and not like a 'chair', 'woman', 'mountain', etc., there must be a complete re-education of their semantic reactions. Korzybski's method of general re-training of semantic reactions is particularly well adapted to orientational requirements for the 'comprehension' of modern art. He says,

> We can train appropriate semantic reactions simply and effectively by 'silence on the objective levels', using familiar objects called 'a chair', or 'a pencil', and this training automatically affects our 'emotions', 'feelings', as well as other psycho-logical immediate responses difficult to reach, which are also not words.

Training of this kind is precisely what is required to facilitate lower order response to the structural meaning of modern art. Let the spectator cease asking what the painting 'means', which is as much nonsense as to ask 'What is the thunder "saying"?' Let him try to cease playing his childish game of 'name the object'. Let him approach modern art in absolute silence, both outwardly and inwardly. Let him behave as if the painted object *is not* the object painted. Let him discover that an oil painting resembles an oil painting. Let him learn to visualize reality in terms of structure, and let him realize that structure is the only content of modern art. Only when he has accomplished these things will his orientation to modern art be entirely adequate, for only then will his semantic reactions be appropriate to the implied metaphysics of modern art, and only then will his map fit the territory.

ETCETERA*

E. E. CUMMINGS

my sweet old etcetera
aunt lucy during the recent

war could and what
is more did tell you just
what everybody was fighting

for,
my sister

isabel created hundreds
(and
hundreds) of socks not to
mention shirts fleaproof earwarmers

etcetera wristers etcetera, my
mother hoped that

i would die etcetera
bravely of course my father used
to become hoarse talking about how it was
a privilege and if only he
could meanwhile my

self etcetera lay quietly
in the deep mud et

cetera
(dreaming,
et
cetera, of
Your smile
eyes knees and of your Etcetera)

* From *Collected Poems*, published by Harcourt, Brace and Company. Copyright, 1923, 1935, 1931, 1938, by E. E. Cummings. Copyright, 1926, by Boni and Liveright.

YOU CAN'T WRITE WRITING

WENDELL JOHNSON

I

THE late Clarence Darrow, while speaking one day to a group of professors of English and others of kindred inclination, either raised or dismissed the basic problem with which his listeners were concerned by asking, 'Even if you do learn to speak correct English, who are you going to talk it to?'

What Mr. Darrow was contending can be summarized in the statement that the effective use of the English language is more important than the 'correct' use of it, and that if you can speak English 'correctly', but not effectively, it does not matter very much 'who you talk it to'. I agreed that day, ten years ago, with Mr. Darrow's contention, and I still do, but whereas ten years ago his remarks served to dismiss for me the problem of the teaching of English, they serve now, in a new context of experience, to raise that problem to a position of peculiar educational and social significance. For, like many others, I have come to take a serious view of the apparently astonishing discrepancy between the opportunity and responsibility of the teachers of English and the actual contributions which they appear to make to the efficiency and well-being of individuals and of society.

The point of view which I have to present with regard to this problem has gradually developed during the decade that I have spent, sitting near the end of the educational conveyer belt, helping to put certain finishing touches on the human products of the scholastic mill. This is a way of saying that my experience has been chiefly with graduate students. When they arrive in the graduate college they have had, as a minimum, sixteen years of formal education. During practically every one of those sixteen (or more) years they have undergone some kind of training specifically designed to enhance their skill in the use of the English language. In spite of this, there falls upon me, as upon other directors of Masters' and Doctors' dissertations, the task of teaching graduate students how to write clear and meaningful and adequately organized English.

What are the linguistic shortcomings that the teachers of English seem unable to correct? Or do they in some measure nurture them? First of all, it is to be made clear that grammatical errors are not particularly serious. Whether or not they find anyone to 'talk it to', the majority of graduate students have been taught most of the rudiments of 'correct' English. In fact, it appears that the teachers of English teach English so poorly largely because they teach grammar so well. They seem to confuse or identify the teaching of grammar with the teaching of writing. In any event, what they have failed to teach my graduate students about writing is not grammar. It is skill in achieving factually meaningful statements, and skill in organizing statements into an order consistent with the purposes for which the statements are made. The students have not been taught how adequately to achieve either precision or systematic arrangement in the written representation of facts. This

can be stated in another and more significant way by saying that they have not been taught how to use language for the purpose of making highly reliable maps of the terrain of experience.

These students exemplify the simple fact that although one may have learned how to write with mechanical correctness, one may still have to learn how to write with significance and validity. One of my friends, who is a particularly astute investigator of the psychology of reading, has stated essentially the same problem by saying that the one place in which a child is not likely to learn to read is the reading class, for the simple reason that one cannot read reading. One can only read history or geometry or biology, etc. If the child reads such material in the reading class, then it is difficult to see how the reading class differs appreciably from the classes in history, geometry, and other subjects. If the child does not read such material in the reading class, then the reading class must differ from these others, but in a puzzling and perhaps disturbing way, for it may be that the reading teacher is actually making the amazing effort to get the child to read reading.

In the teaching of writing, or any other of the language skills, the same problem appears. One cannot write writing, any more than one can read reading. One can only write, just as one can only read, history, or geography, or physiology, or some other such subject about which writing can be done. One can, of course, write about writing, but what one writes about writing will have little, if any, significance except insofar as one writes about writing about something else. We have to deal here with a very general, and a very crucial, problem. What is true of reading and writing is true, also, of speaking, or drawing, or painting. It is true of mathematizing. It holds for any kind of symbolizing. Just as one cannot, with significance, read reading, or write writing, or speak speaking, except insofar as one reads about something, or writes about something, or speaks about something, so one cannot, with significance, symbolize symbolizing in general except insofar as one symbolizes the symbolizing of something.

II

It seems clear to me, as I attempt to analyze the writing difficulties of graduate students, and as I ponder over my own experiences as a student of English, that these considerations, sketched immediately above, are crucial. The teacher of English appears to attempt to place the emphasis upon writing, rather than upon writing-about-something-for-someone. From this it follows quite inevitably that the student of English fails in large measure to learn the nature or the significance of clarity or precision and of organization in the written representation of facts.

He learns grammatical correctness reasonably well, because that is emphasized. But so long as the student's primary anxieties are made to revolve around the task of learning to spell, punctuate, and observe the rules of syntax, he is not likely to become keenly conscious of the fact that when he writes he is, above all, communicating. If he is to learn to communicate effectively, he must realize that his first obligation to his reader is not to be grammatically fashionable, but to be clear and coherent. One does not just communicate, one communicates something to someone. And the something communicated is not the words used in the communication, but whatever those words represent. Moreover, the degree to which there is communication depends precisely upon the degree to which the words represent the same thing for the receiver or reader that they do for the sender or writer. And the

degree to which they do is an index of the clarity of the communication or written statement. Thus, clarity can be *measured*, not just 'felt' or 'appreciated', but measured, in terms of the ascertainable agreement between writer and reader, and among various readers, as to precisely what the words of the writer represent.

My graduate students have not been taught this. They write as if they had been trained to observe a principle of *caveat lector*. Such a principle, strange as it may seem, is championed, in one form or another, by certain teachers of English. Mr. Cleanth Brooks, Jr., writing on the subject of communication in poetry in the journal, *American Prefaces*, in 1940, expresses this curious point of view in these words:

> The theory of communication throws the burden of proof on the poet, overwhelmingly and at once—the reader tells the poet: here I am; it's your job to get it across to me—when he ought to be assuming the burden of proof himself. Now the modern poet has thrown the weight of responsibility on the reader.

I have quoted Mr. Brooks because he has succeeded in stating with unusual conciseness this strange notion that the writer is properly under no obligation to be communicative. I do not wish, on the other hand, to be understood as saying that a reader has no obligation to try to meet a genuinely original (and therefore difficult) writer half-way, for obviously many writers and poets, dissatisfied with the clichés of their time and trying to create new ways of feeling (i.e., to recanalize the reader's semantic reactions), must necessarily rely upon the reader's willingness to accept a revised vocabulary of an unfamiliar set of symbols. But this is a problem only in extremely advanced levels of artistic composition. In undergraduate instruction, even to imply that a writer has no obligations to his readers is to become, whether one wishes to or not, an advocate of obfuscation.

Such advocates of obfuscation apparently teach fairly well, if it is they who have instructed my graduate students. They have never learned, so far as I can see, to take the reader seriously into consideration. They do not, to be sure, artfully avoid clarity; they artlessly fail to achieve it. The contention that in writing they are communicating, that they are addressing a reader, simply strikes them as a novel point of view. They do not rebel against it; many of them just don't understand it.

This basic notion of communication, however, is not extraordinarily difficult to explain, and as it begins to sink in, and when the students have seen a few demonstrations, not of the reading or criticizing of communications, but of the *process* of communicating by means of writing, they are at least prepared to understand that there are techniques of clarity. Moreover, they are able to understand that these techniques have something to do with effectiveness in writing—unless one means by writing a gyring and gimbling in the wabe of literary slithy toves, or unless one believes the excuse offered by frustrated literary midwives: namely, the 'only-God-can-make-a-tree' theory that effectiveness cannot be taught at all. But this definition of 'writing' and this theory of 'effectiveness' have practically nothing to do with the kind of writing that involves communication. For communication is achieved by virtue of clarity, as this is defined in terms of agreement between writer and reader, or among various readers, as to what the writer is referring to. The ability to achieve clarity in this sense, and thus communicative effectiveness, is a tree that others besides God can make, at least in a rough fashion.

III

This discussion is not designed to take the place of a textbook for the teaching of effective communicative writings, but it is offered in the hope that a brief statement of a few simple principles upon which such writing is based might serve at least to raise the question as to why these principles are not more adequately taught by English instructors.

The first of these principles has already been given in the statement that clearness depends upon, and can be measured in terms of, the degree of agreement between the writer and his readers as to what the words of the writer represent. Simply by striving for a high degree of such agreement, the writer discovers, in some measure, his ingenuity in achieving it. He discovers the usefulness of conditional and quantifying terms, the confusion created by leaving out significantly differentiating details, the degree to which the meaning of a term varies from context to context, and the kinds of differences he must allow for among his readers' habits of interpreting words. He learns to rely less on the dictionary and more on the linguistic habits of the people for whom he writes. He discovers that literary posing, pleasurable as it may be, usually can be enjoyed only at the expense of effective communication—that Chesterton's paradoxes or Paul de Kruif's chronic astonishment are more titillating than informative. He discovers that there are various levels of abstraction, and that if he goes systematically from lower to higher levels he can use so-called abstract words and still be reasonably clear.

Above all, perhaps, he discovers the basic significance of order, or relations, or structure, or organization. This matter of structural relationships has wide ramifications, and no writer ever exhausts it, but the student quickly grasps some of its more obvious aspects, if he is striving for agreement between himself and his reader. It does not take him long to understand that the organization of what he writes should correspond to the organization of what he is writing about if the reader is to follow him readily. The graduate students with whom I work frequently have difficulty organizing their descriptions of experimental techniques or procedures, and I have found that it is more helpful to refer them to a cookbook than to a textbook on composition. By examining a cookbook they see at once that the organization of a description of procedure is determined simply by the order of the events that make up the procedure. First you do *a*, and then *b*, and then *c*, and you write it in that order because you do it in that order. This simple principle of order is fundamental in practically all descriptive, narrative, and expository writing, and it is obvious to anyone who is attempting to be considerate of the reader.

One might suppose that graduate students would know this, but in spite of the years they have spent in English courses most of them seem not to have learned much about it. The more significant fact is that, as a rule, they learn quite readily to apply this simple principle, once it is clearly explained and demonstrated to them. In this case, certainly, one can make a tree that either God or the English teachers forgot to make.

One aspect of organization that seems to have eluded practically all graduate students is that involved in the making of transitions. Even those who have been taught how to lay beads in a row have not been taught how to string them. Just as the order of what one writes is determined by the order of the parts or events involved in what one is writing about, so the ways in which transitions are made in

the writing are determined by the ways in which the parts or events are related in the realities one is describing, narrating, or explaining. The ability to move from one sentence or paragraph or chapter to the next, in such a way as to blend them into a unified whole, is largely dependent upon an understanding of the reasons for going from one to the next, of why one statement should follow another instead of the reverse, of why one should say, 'It follows, then', rather than 'But'. And these reasons are found in the character of the relations existing among the details of that about which the writing is being done. This becomes obvious to one who is not trying to write writing, but who is attempting, rather, to write-about-something-for-someone.

Another principle underlying communicative writing is that clarity is a prerequisite to validity. It is to be considered that statements that flow beautifully and are grammatically superb may be, also, utterly devoid of factual meaning, or meaningful but vague, or precise but invalid. For writing to be effective, in the sense in which I am using this term, it may or may not be grammatically correct, but it must be both clear and valid. It can be clear without having validity, but if it is unclear its validity cannot well be determined. It must, then, first of all, be clear; it must be that before the question of its validity can even be raised. We ask of the writer, 'What do you mean?' before we ask, 'How do you know?' Until we reach agreement as to precisely what he is writing about, we cannot possibly reach agreement as to whether, or in what degree, his statements are true.

Only to the extent that the various readers of a statement agree as to the specific conditions or observations required for ascertaining its validity, can the question of its validity have meaning. And the extent to which the readers of the statement agree on these conditions is, of course, indicative of the extent to which the statement is clear. If a statement is such that its readers do not agree at all as to how it might be verified or refuted, the statement may be 'beautiful' or 'rich in meaning' or grammatically irreproachable, but it is also, from the point of view of scientific courses such as I am teaching, nonsense. It cannot be demonstrated to be valid or invalid, and is meaningful, therefore, to its author, possibly to his English teacher, and perhaps to his psychiatrist.

My graduate students have not learned this, either. They show this in a particularly disturbing manner when they first attempt to state the topics or problems they propose to investigate in undertaking their theses. They quite characteristically propose problems which preclude the possibility of clear discussion. They propose questions for investigation, for which they desire to obtain precise answers, but which are so stated as to be unanswerable. Apparently they have never been taught that one cannot get a precise answer to a vague question—that the terminology of the question limits the clarity and thus the validity of the answer. Many students are so befuddled on this point that they do not recognize any relation at all between clarity and validity. They actually assume, for example, that they can ask, 'What causes personality maladjustments?' without specifying what they mean by 'causes', or by 'personality', or by 'maladjustments', or what observations one is to make in order to comply with their definition of 'what'. Many of them appear to have been taught that to eliminate the vagueness of a question or statement is to destroy its 'richness of meaning'—that for a statement to be 'full of meaning' it must

not mean anything in particular!

Even though they have been so taught, and come, therefore, to the graduate college quite untrained in the writing of valid statements, they can be taught, to a considerable degree, to gauge the validity of what they write. They can be trained to do this by being trained, first, to write clearly. For when a statement is made clearly—when there is reasonable agreement among its readers as to what it represents in the realm of fact—its validity can be judged, or a procedure for determining its degree of validity can be devised.

In summary, then, what graduate students, as I know them, have not been well taught—and what, in my judgment, their English instructors should have been able to teach them, because the students do learn readily—is the ability to write a clear, organized, unified, and valid document. They have been made familiar with grammar, for the most part, and they have picked up a few tricks of literary flavoring. The grammar can be used to advantage; most of the literary condiments have to be chucked.

IV

There appear to be three main reasons for the English instructors' failure. The first is that they do not appear to utilize to any considerable extent the principle of teaching by example. They tell the student how to write and how not to have written, but they don't, as a rule, do any actual writing for him or with him. They show him examples of what has been written, but no examples of something being written.

To try to learn to write by reading literature that has already been written and thoroughly jelled, instead of by observing the actual writing of literature, is much like trying to learn to bake a cake by eating one, instead of by watching the baker make a cake. And if you hold the writer's pencil you learn faster, just as you do if you hold the maker's mixing spon. It is the old, old principle of teaching by example, and what the teachers of English forget is that there are no examples of writing in the grammar book or the anthology; there are only generalized blueprints of statements yet unwritten and examples of something already written—cakes that were baked yesterday. The teacher herself has to provide the examples of writing, to demonstrate the process. She must bake the cake of written English, not merely eat the cake that Hawthorne baked, as she stands before the class.

The second, and a more grave, reason for their failure is that they appear to place the emphasis on 'writing', rather than on writing-about-something-for-someone. You cannot write writing. Or, at least if you do, you are not likely to learn how to write with clarity and validity, because they are not important to one who merely writes writing. Unless the emphasis is placed upon writing as a form of communication and directed very definitely, therefore, to an actual, live reader, the importance of clarity, organization and validity is not likely to become very apparent. Their importance becomes obvious, and the means of achieving them suggest themselves more or less readily, the moment one begins seriously to write about-something-for-someone.

The third and final point in this 'diagnosis' of English instruction is that teachers of English, with apparently only a few exceptions, cling tenaciously to two strange theories. The first is that writing is an art, and the second is that it cannot be taught. What they seem to mean when they say that writing is an art is that writing does not have to say anything—except

to the reader who has 'appreciation'—that writing is at its best when it is a form of expression *qua* expression.

In teaching the student to write, if one takes this view of 'writing as an art', there is no point—in fact, there is a strong argument to the contrary—in training the student to express himself clearly or with validity. For truth that is 'not art' would be of no value, and if art that is clear is regarded as a contradiction in terms (and it seems to be so regarded by some), there would remain only truth that is vague as the ideal of the teachers of English whom we are here discussing. But in communicative writing, truth is never vague, for unless a statement is clear, the degree to which it is true cannot be determined. All of which goes far to explain how students can reach the graduate college without learning how to produce effective communicative writing.

The explanation is extended when we recall the other theory, so popular among some teachers of English, that real effectiveness in writing, since it is an 'art', cannot be taught at all. Only God can make a tree; the teacher of English can only water the tree with verbal dew in the hope of keeping it green, and even the value of doing that is debatable. Teachers frequently boast of having 'discovered' a writer; it seems that this in itself is regarded as no mean accomplishment. It is also to be noted that writers are sometimes said to have been 'influenced' by a teacher. But when a teacher has 'discovered' a writer and 'influenced' him, he cannot further add to what the genes have done, nor detract from what the fates will do. Presumably, then, he doesn't try. And this pedagogical swooning by the teachers of English, on the theory that you can't make a silk purse out of a sow's ear, results in their making a great many sows' ears out of silk purses. It is not a question of the truth or falsity of their theory that effective writing cannot be taught, although this theory is probably not as largely true as many teachers of English suppose. The significant point is that the theory makes for unimaginative and lackadaisical teaching. Even God's trees might benefit from some systematic pruning and spraying.

V

My own narrow concern with all this lies in the fact that the ineffectiveness of the English instruction in our schools makes for a serious difficulty in the graduate college in all its branches. But the problem has an importance far more vast than this fact could ever give to it. For the ability of the individual, and of groups of individuals, to use language clearly and with validity is basic to personal efficiency and general development—it is basic to sanity itself—and it is fundamental to intelligent social organization and to the adequate management of national and international problems. The teachers of English in our schools and universities have been and are being entrusted with the heavy responsibility of training the members of our society in the effective communicative use of our language. It is not a responsibility that they can meet appropriately merely by teaching the formalism of grammar, or superciliously disclaim by asserting that effective writing is an art and cannot be taught.

Effective writing is a human necessity in anything resembling a democratic culture, and this becomes increasingly true as the culture becomes increasingly complex. If the effective use of language cannot be taught, or if it is not to be taught to a far greater extent than it has been, we may well have occasion to despair of the grand experiment dreamed by Voltaire, cham-

pioned by Washington and Franklin, and cherished by the American people through many generations. And if we must despair of that, then truly, even if you do learn to speak correct English, it may well not seem to matter very much 'who you talk it to'. For when the people cannot adequately speak or write their language, there arise strong men to speak and write it for them—and 'at' them.

The issues of which I write are by no means to be regarded as academic issues. We are a symbolic class of life. To say that we are human is to say, above all and with incalculable significance, that our problems, as individuals, as groups, and as a world culture, are symbolic problems. They are problems that center around the symbols of government, the symbols of finance and general economy, of social status, of power and prestige, of class and race. They are the problems involved in the great institutionalized symbol systems of the Church, the Law, the State. They are problems of meaning, of evaluation, of orientation, processes which, on human levels, are predominantly symbolic in character. It is not the vestige of some forebear's whim that the whole structure of our educational system is founded squarely on the three R's, for reading, writing, and the use of numbers are forms of behavior in the absence of which *human* society would disintegrate and vanish. The degree to which these forms of behavior are cultivated and made adequate determines, more than does anything else, the degree to which a symbolic class of life may escape the threat of self-destruction and achieve cultural maturity. Our maladjustment, no less than our genius, as individuals and as groups, lies in our way of responding to and with symbols.

The place of the teacher of English in the structure of a symbolic society is, thus and indeed, not one to be occupied by petulant little men engrossed in verbal 'fancy work'. It is not too much to say that our possibilities for progress are determined, and limited, by those who instruct us in the use of our language. This view is as disheartening, perhaps, as it is challenging, but the more challenging it is to some, the less disheartening it need be to others.

GENERAL SEMANTICS AND PSYCHOANALYSIS:
Korzybski and Freud

CHARLES I. GLICKSBERG

THE recent 'science' of general semantics has performed a notable service in attempting to analyze the nature of meaning, the dynamism of symbols. In framing its synthesis it has been compelled to borrow a great deal from a number of other sciences. If psychology has proved helpful in the development of semantics, the latter has paid its debt with compound interest. There is now danger that the infant will devour the parent. For psychology, like language itself, operates on various levels. On the physiological level of stimulus and response, it is on safe ground, though even there the organismic school of thought has succeeded in casting doubt on the simple behavioristic explanation. When we venture to go a step beyond, we come upon shifting sands of theory. It is when the psychologists attempt to apply their laboratory findings and scientific assumptions to social situations, when they endeavor to construct a psychology of society concerned with personality and conduct, that philosophical valuations creep in. This is particularly apparent in the work of the psychoanalysts who have made the most ambitious claims. They have applied their method not only to mental and nervous diseases but also to phenomena like politics, war, peace, the family, literature, religion, and art. One psychoanalyst, for example, sought to prove by a reliance on Freudian symbolism that Communists are obsessed with an Oedipus complex, that their revolutionary agitation is a substitute reaction for their parricidal impulses, their desire to slay the dreaded old man of the tribe.

The Freudian Contribution

Semantics has borrowed from psychoanalysis only that which it considered valid and useful for a functional theory of 'mind', which it then applied vigorously to the problem of constructing a philosophy of language, 'human nature', and social behavior. Instead of concerning itself with pathological cases, with neuroses and psychoses, it concentrates on the pathology of the so-called norm, and attempts to achieve organismic unity in the individual personality and the social body by means more eclectic, more comprehensive in scope than those employed by orthodox psychoanalysis.

Psychoanalysis has made contributions to general semantics in at least three respects: first, in its explication of how the mind functions in relation to the body or what might be called the determinism of thought; second, in its analysis of mental diseases and its method of therapeutics; third, in its interpretation of the motives underlying human behavior, particularly

in its discussion of association of ideas, symbolism, and language in general. Each of these aspects is important; none can be divorced from the other.

Alfred Korzybski, author of *Science and Sanity*, the textbook of general semantics, has accepted the following Freudian doctrines. First, he has adopted the clinically demonstrated thesis that the mind is not a higgledy-piggledy assemblage of fortuitous events. It is overdetermined. There is continuity, interconnection. The psychoanalyst, by a process of dissociation, by the breaking up of amnesia, succeeds in tracing back the apparently irrelevant and fantastic contents of the unconscious mind. Even dreams operate according to determinate 'laws'. Second, there is the imperious craving for fulfillment, which manifests itself in the process of sublimation. If reality cannot be mastered openly, it can be circumvented by symptomatic formations. Third, the symbols employed by the unconscious in dream-work and reveries and poetry are psychologically revealing. The Freudian treatment of symbols, though much of it is open to serious doubt, is suggestive and fruitful, and general semantics owes much to the Freudian influence.

There are, of course, other contributions by Freud which have helped to advance the 'science' of semantics. His plea for candor and sincerity in sexual matters as an indispensable condition for mental hygiene is of considerable importance. For the hypocrisy that prevails in the field of sex invariably spreads to other areas of our culture. We become divided personalities; painful conflicts go on between the *super-ego*, our ideals, and the *id*, our 'animal', libidinous self. We learn to disguise as well as control our real feelings. In varying degrees, as the Freudians maintain, we all participate in a collective neurosis. In 1904, Freud declared: 'For conscious will-power governs only the conscious mental processes, and every mental compulsion is rooted in the unconscious. . . . It is only by the application of our highest mental energies, which are bound up with consciousness that we can command all our impulses.' [1]

All this leads up to a fundamental issue. Before the psychoanalyst can bring into consciousness unconscious memories of a painful affective nature, he must overcome a fortified line of resistance on the part of the patient. The semanticist encounters more or less the same mechanism of defence when he tries to overcome the linguistic compulsions to which many people are subject. To emancipate them, he must adopt practically the same procedure that the psychoanalyst uses in treating clinical cases: he must study the life history of each person, the subjective as well as social forces which drove him in this direction. The semanticist is under the necessity of breaking down this formidable psychic resistance, this unconscious fixation on certain symbols and stereotypes. But by doing so he manages to destroy the symmetry and security of the 'pleasure-principled' universe that people have created for themselves. And yet the attempt must be made if reality is to be conquered. Those who seek freedom must make the effort to free themselves from the trammels of language, which are also the trammels of thought. They must combat the forces of repression which keep them divided beings. What Freud says regarding psychoanalytic treatment may be applied, *mutatis mutandis*, to general semantics: 'Psycho-analytic treatment may in general be conceived of as such a ***re-education in overcoming internal resistance***'.[2]

[1] Sigmund Freud, *Collected Papers* (London, 1924), I, 261.
[2] *Ibid.*, I, 262.

The aim of general semantics, like that of psychoanalysis, is to train people to accept the reality-principle. That way lies sanity. Only thus can the conflicting impulses of the personality be integrated and emotional stability be achieved. Psychoanalytic investigations have shown that unpleasant truths (i. e., reality) are not readily embraced by the mind. The child, for example, regards itself as omnipotent and gains this precious sense of omnipotence by negating reality. In order to grapple with unpleasant ideas, a person must pass through a complicated process of adjustment. What is true of the neurotic patient is also true in large measure of the 'normal' person. The neurotic struggles to escape from reality because it is painful; he rejects unbearable parts of reality, or, in extreme cases, all of it. The mind tends irresistibly to strive towards pleasure and to avoid pain; a repressive force draws it back from any unpleasant experience. The 'normal' mind, however, is able to face reality even when it is unpleasant because it has learned that only by acceptance of the reality-principle can its desires be fulfilled. It struggles to understand the world instead of withdrawing from it. The ego that is directed solely towards pleasure spends its energy vainly in wishing; the ego that compromises with reality strives for the satisfaction of its fundamental needs.

Just as the beginner in psychoanalysis must be psychoanalysed before he can practise his profession, so the semanticist must first consider the mote in his own eye; he must take into account the influence of language and people and social norms upon his unconscious feelings; he must beware of his own motivations and fixations. His achievement, like that of the psychoanalyst, is conditioned by his own resistances and complexes. He must emancipate himself before he can hope to emancipate others. He cannot work on a high level when his own feelings are confused, when he is himself the victim of unconscious compulsions. In extending the scope of its work, semantics will have to pay far greater attention than it has thus far done to the theory of repression. For repression plays a central role in the life of the unconscious. Freud lays great emphasis on the part played by the instincts in the conceptual life. Every instinct strives to assert itself by energizing those 'ideas' which seem to coincide with its aims and needs. Since the instincts frequently conflict, the 'ideas' are often bound to find themselves in irreconcilable conflict.

Since the theory of repression is of cardinal importance for the understanding of psychoanalysis, it must be examined for its bearing on the study of general semantics. If rejection of painful affective memories is present in neuroses and hysteria, it is equally discernible in the mental state of so-called normal people; it is flagrantly evident in their perversion of linguistic symbols. They abuse language because it suits them to do so; they prefer the convenience of illness to the hardihood of health because it makes their world seem more secure, more to their liking. They acquire a magical control over refractory reality. The dynamic process of repression appears in the psychic life of all people whenever crucial values are at stake. The affective pressure, devious and subterranean, is not to be denied. Small wonder that Freud after a time came to the conclusion that psychoanalysis could not be limited to the treatment of nervous diseases, but that it must be extended to other areas of mental functioning. It could disclose the connection that obtains between pathological phenomena and 'normal' mental life; it

could make clear unsuspected relationships between its discoveries and those of other sciences dealing with the mind of man. Here obviously is the open sesame for the purpose of incorporating psychoanalysis within the sphere of semantics. If the unconscious is active in neuroses and in the creation of works of the imagination, it is also to be found in the language of men and women, in the fantasies and ideologies they shape to project their world. Freud was fond of declaring that every one's understanding will be limited by his repressions: a bit of insight that illuminates the resistance many people display to new scientific truths.

If we accept the theory of repression, then we are committed to a belief in the unconscious. Unconscious ideas remain permanently shut out from the light of consciousness. The reason for this drastic exclusion rests on the fact that certain impulses and desires are incompatible with the 'ideals' set up by the conscious mental life. It is the struggle between renunciation and desire that forms the dynamic nightmare of the unconscious. The cultural imperative is that the individual subordinate his infantile egocentric wishes for the sake of the collective good. Every product of culture bears within itself the kernel of an original repression, the fantasy of the unconscious. It is to be found in practically every civilized institution, in mythology and religion, in art and philosophy and ethics.

Important also for an understanding of how the mind functions is Freud's discovery that many conscious processes are controlled by forces of which the individual is completely unaware. This holds true of normal as well as abnormal people. Now such a discovery makes suspect the integrity of the truths we live by. In brief, the 'pure' intellectual sciences are dominated by coefficients of feeling. It is questionable whether any mental process as such is not conditioned at its source by the dynamics of affect. All psychology is fundamentally a 'feeling psychology'. Rationalization underlies every aspect of the mental life; it is present in the highest as well as lowest reaches of thought. Psychoanalysis thus beholds man not as a consistent, independent, completely rational creature, but as an organism 'only dimly conscious of the various influences that mould his thought and action, and blindly resisting with all the means at his command the forces that are making for a higher and fuller consciousness'.[3] Man is the self-willed and perennial victim of illusion, and it is the task of both general semantics and psychoanalysis to strip these veils of illusion from the face of civilization. Utilizing the theory of repression and rationalization, general semantics is able to re-examine and dissociate ideas commonly held as sacred, final, and infallible. But general semantics is a constructive and liberating as well as skeptical discipline. Though it undermines piously supported illusions, it paves the way for the efficacious communication of ideas more conformable to reality.

The Semantic Synthesis

General semantics is too comprehensive a science of the mind to be indebted exclusively to one branch of knowledge. If it owes much to Freud it has not hesitated to revise his theories when that seemed necessary nor to appropriate essential findings from other fields of knowledge: organismic psychology, anthropology, physics, colloidal chemistry, mathematics, symbolic logic, medicine. Unlike the psychoanalysts with their gaze fixed mesmerically on the evocations of the unconscious, the

[3] Ernest Jones, *Papers on Psycho-Analysis* (New York, 1918), p. 15.

semanticist regards thought as fundamentally an expression of the organism-as-a-whole. Consciousness, far from being a separate, autonomous activity, is vitally related to the rest of the functioning organism. Hence whenever we focus our attention on some object or event, we must bear in mind that we necessarily omit many qualities and relations; we behold at all times a fragmentary, conditional, relative universe. By realizing the conditionality of human knowledge we not only emancipate ourselves from the toils of absolutism; we also spare ourselves many severe shocks. It is therefore important, argues the semanticist, not to confuse the various orders of abstraction. Words must not be objectified; labels must not be identified with the thing. By this means, the human mind can purge itself of the sources of pathological disturbance.

The aim of the semanticist is not primarily to cure mental diseases but to release the higher centers without making the organism suffer a relapse into regressive tendencies. The student of general semantics is educated so that he may have a full knowledge and awareness of the reality-principle; the contents of the unconscious are brought into consciousness; the dark places are flooded with the bright sanative light of day. The semanticist is also of the belief that 'human nature' can be changed for the better. 'Human nature', an abstraction with dangerous implications, is nothing more than a complex of semantic reactions. If the reactions can be educated and appreciably changed, and the semanticist believes they can, then the organism-as-a-whole can be improved.

But the improvement depends upon the ability of educational semantics to uproot fixed habits, private taboos, private doctrines, all of which are deeply seated in the unconscious. But instead of adopting the clinical technique of the professional psychoanalyst, the semanticist endeavors to furnish training in proper evaluation which will neutralize the individual's attachment to the unconscious. The benefits derived from a trained sense for proper evaluation apply not only to language but also to social, economic, political, and ethical relations. 'Before any sanity can be brought into the analysis of these relations', declares Korzybski, 'before they can be rationally analysed, the investigators would have to be trained to observe correctly and to avoid verbal structural pitfalls'.[4] In attempting to put this matter more clearly, Korzybski asserts that 'all the more subtle forms of adjustments in organisms, "intelligence", so-called "civilization", our "ethics", "happiness", etc., and finally, *sanity*, which is the evidence of semantic adjustment or proper evaluation on human levels, are based on the neurological interplay, the number, and multi-dimensional order of superimposed (not added) positive and negative excitations. The positive, or the direct and obvious, responses are the more primitive; the negative, resulting in not always obvious consequences, are the result of further structural complexities, which reach their culmination in the normally developed cultural man'.[5]

The semanticist is struggling to produce some degree of structural correspondence between the objective world and the verbal world. Harmonious adjustment is possible only on the basis of empirical understanding of the external environment. When our verbal explorations and experiments are empirically verified, then we have achieved a measure of understanding. If our language is structurally false, it gives rise to systems which are fantastically unnatural, and this sooner or later imposes a heavy strain on our nervous organism.

[4] Alfred Korzybski, *Science and Sanity* (Lancaster, 1933), p. 449.

[5] *Ibid.*, p. 355.

'The self-imposed conditions of life become more and more unbearable, resulting in the increase of "mental" illness, prostitution, criminality, brutality, violence, suicides, and similar signs of maladjustment. It should never be forgotten that human endurance has limits. Human "knowledge" shapes the human world, alters conditions, and other features of the environment—a factor which does not exist to any such extent in the animal world.'[6] The verbal environment has to be completely reconditioned on a new basis. Once the linguistic system is radically readjusted, the old and false doctrines will perish.

Theories and doctrines are always linguistic in nature. They provide the rational means for leading a consistently rational life. They are the shorthand of experience; they are collective representations, the adaptive symbolism of past racial experience. Since the method of abstraction is inherent in the human nervous system, each one of us is filled with different kinds of theories. That is inescapable. What we must do is to select those theories which fit the facts of experience.

Both general semantics and psychoanalysis believe that man can be changed, but the former is far more optimistic in its conclusions. Freud is distrustful of the masses; so is Korzybski, but he at least seems to feel that by educative means they can eventually be lifted from their sodden, benighted condition. For the psychoanalyst, however, the unconscious is a witches' brew of instinctual energy, uncontrollable libidinous impulses; the lid is always about to be blown off. Animal and human, *id* and *super-ego*, conscience and carnality, desire and the ideal are locked in mortal combat, and with disastrous consequences upon the nervous system: consequences visible in the outbreak of neuroses and psychoses, the madness of war, mob lynchings, pogroms, racial persecutions, collective hatred, and hysteria. Korzybski, on the other hand, contends that once the linguistic and structural reforms he advocates are instituted, humanity will first enter upon its rightful cultural heritage; it will achieve full manhood. Once semantic blockages are removed, once men learn how to apply their new-won freedom of analysis and evaluation, the creative powers of the race will be released. At present the normal man, according to this view, is in reality a dead average, a socially approved mediocrity; hence he is pathological because he has not given expression to the fullness of his potentialities. Therefore Korzybski would fain establish new norms of sanity, raise the level of literacy and intelligence, so that symbols would no longer exercise a single-track, compulsive function; they would become indefinitely conditional. If a single generation, Korzybski maintains, were properly educated in the use of semantic reactions, the source of human disagreement would be eliminated; the roots of human dissension, due to the incorrect employment of symbols, would be extirpated. All of human life is vitally affected by the problem of correct symbolism.

[6] *Ibid.*, p. 270.

Points of Comparison and Contrast

While general semantics has been able to utilize some of the findings of psychoanalysis, it parts company with the Freudians when they assert that symbols possess a constant meaning. The semanticist insists that the interpretation of the symbol depends on the context and on the nature of the associations made by the individual. The same symbol may have a complex variety of meaning. Symbolism, in short, is not independent of individual condi-

tioning factors. Though the individual is restricted in his choice of symbols, though he may often select one that is common to many other people, his comprehension and use of the symbol will depend on his affective background, his personal history.

The most far-reaching importance of psychoanalysis lies, as we have shown, in its exposition of the dynamics of the mind, its concept of the unconscious, its explorations of the psychic life in all its manifestations. The old theory of the will as something absolute must be revised, now that the determinism of all mental life has been empirically established. Freud does not spare man his deep-seated illusions, pointing out how the individual leads a double existence. The mind of man is ruled by fantasy, not reason; it is profoundly irrational rather than logical in content.

As long as psychoanalysis admits that it is possible for conscious processes to influence unconscious thoughts, then the semantic method stands vindicated; the conscious life can invade and gradually dominate the unconscious. In other words, unconscious thoughts and impulses may be subdued and educated by consciousness. All semantic training implies the conscious guidance and control of hitherto unconscious activities. But this reclamation of the unconscious, as the semanticist is quick to point out, does not really solve the problem. There is the other horn of the dilemma: What shall be the quality of consciousness striven for by the individual? What shall be the most satisfactory attitude toward reality?[7]

While no one as yet has ventured to undertake a psychoanalysis of general semantics, Korzybski practically furnishes a semantic analysis of Freudianism, its limitations and its strength, its contradictions and its positive contributions. He accepts the unconscious, but instead of devoting himself to the task of dredging the contents of the unconscious, he is interested in the structural unconscious that underlies our language, our philosophy, our myths, our values, our social order. Hence his concern is with both society and the individual, with both the unconscious and its relation to reality. He is not, however, satisfied with adjustments to social reality as we find it, which is what the psychoanalyst, on the whole, endeavors to do for his patient. Such an adjustment offers but temporary alleviation. It is necessary that all of present-day society be analyzed by semantic methods in order to discover the degree to which it is dominated by false values, by infantilism, regressive tendencies. The objective is to develop ultimately a technique of preventative semantic hygiene.

Since the organism works as a whole, it cannot be cured by fragmentary methods. There must be no split, artificial in nature but encouraged by language, between 'mind' and 'body'. Our language should correspond as closely as possible to the structure and functioning of the organism. Man is subjected not only to external stimuli but also to semantic stimuli against which he has developed but scanty means of protection. Our language, our attitudes, our philosophy, our doctrines, our proverbs and maxims: all these constitute semantic stimuli that operate internally.

'Mental' ills arise because a person confuses the orders of abstraction. People who live in a delusional world can be rescued and re-educated to face the world of actuality. But the organism, unless semantically prepared, is incapable of adjust-

[7] In *New Ways in Psychoanalysis*, Karen Horney revises a number of Freudian concepts in the light of new clinical insights. Instead of placing excessive, if not exclusive, emphasis on instinctual forces, she would root the etiology of the neuroses in the environmental factors. Sociological orientation replaces the purely biological and physical orientation.

ing itself to multiordinal reality; it dwells instead in a sphere of fiction and fantasy. Consciousness of abstracting can save them; that is the specific remedy that Korzybski proposes. For when we are conscious of abstracting, misevaluation is corrected; we are stopped from identifying the symbol with the thing.

There is thus outlined for us the general mechanism of human adaptation. Consciousness of abstracting furnishes protection against the overwhelming flood of stimuli from the world about us. Mental therapy is actually a form of semantic re-education. The patient must not only rationalize his trouble but also relieve it emotionally, reactivate it, evaluate his past disturbing experience in the light of new insight. Rationalization alone is not effective to bring about a change for the better; there must be a semantic stirring up of past meanings before the wrong evaluation can be eliminated. The lower centers as well as the localized area of rationalization must be affected. The organism-as-a-whole must be re-educated.

Thus what Korzybski takes over from psychoanalysis is the belief that benefit is bound to result from enlarging the field of consciousness by bringing into consciousness elements dwelling in the unconscious. On the consciousness of abstracting he finds a simple method for eliminating the majority of human difficulties. Moreover, whereas the Freudian conception of the reality-principle is vague, Korzybski leaves us in no doubt that science alone gives us full knowledge of current reality. Scientific method and scientific ideas must gradually suffuse and interpenetrate the structure of the language we use. Korzybski points out that while the Freudian system was scientific at the time of its inception and early development, it must at present be extensively revised in the light of new scientific knowledge. It would take him, he declares, a separate volume to elaborate the revisions that would have to be introduced into the body of ideas and doctrines associated with the name of Freud. A new postulate would be that of an active, dynamic unconscious. Once this active unconscious is accepted, the mental determinism that Freud accepted is seen as inadequate; it is two-valued, not multi-valued. In the non-aristotelian system, Korzybski declares, 'the fundamental postulates of the system-function which underlies all psychotherapy have been accepted, although they have been vastly enlarged to comply with the known facts and scientific requirements of 1933'.[8]

[8] Alfred Korzybski, *Science and Sanity* (Lancaster, 1933), p. 536.

CHEMICAL SEMANTICS

S. WEINER

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REPEATEDLY we have been told that it is the duty of an instructor to insist on accurate terminology. Occasionally, letters and articles in this JOURNAL indicate the interest of its readers in maintaining or establishing correct definitions and exact phrasing. In the face of this interest it would seem heresy to claim that adherence to 'correct' terminology can sometimes do more harm than good.

The Benzoyl Dispute

Toward the end of the eighteenth century Lavoisier, in classifying the elements and compounds, found it necessary to include an intermediate type that seemed to be both element and compound. He called it the 'radical' and defined it as a group of elements that acts as a single unit and, like a metal, unites with oxygen. He believed that a radical was analogous to a metal and that union with oxygen was analogously its most important chemical property. In effect, the word 'radical' had here two meanings, one based on the group permanence and the other on the affinity for oxygen. So long as the only known 'radicals' fulfilled both meanings no one took the trouble to observe the double definition, and the two meanings were unconsciously regarded as synonymous.

In the early 1830's, however, the benzoyl and acetyl groups were studied. Liebig, Wöhler, and Dumas classed the benzoyl group as a radical because of its persistence throughout a series of compounds. Berzelius thundered against this view with what he considered irrefutable and rigorous logic. Benzoyl, he insisted, could not be a radical because it contains oxygen and a radical by definition is something that itself unites with oxygen: 'A radical cannot be an oxide. The very meaning of the word radical indicates that it represents a body which is in union with oxygen' (1).

Polymerization

Polymerization was once (and still is, in most textbooks) defined as an increase in molecular weight without a change in elementary composition. It was therefore generally applied in organic chemistry to the *self-addition* of unsaturated compounds. In time it has come to be applied, especially in industry, to any reaction producing a considerable increase in molecular weight by the coupling of molecules, like or unlike, saturated or unsaturated. There is little resemblance in composition between benzyl chloride and its polymer, polybenzyl, produced by the Friedel-Crafts condensation:

$$n\mathrm{C_6H_5CH_2Cl} \rightarrow \mathrm{C_{7n}H_{6n}} + n\mathrm{HCl}$$

Certainly, benzyl chloride is not an olefinic or acetylenic compound, nor does it react by self-saturation of a double bond.

Nevertheless, states Carothers (2), one can find instances in the literature where the fact that a reaction is called a 'polymerization' is cited as proof that some unsaturated compound must be an intermediate product in the reaction.

Lyophile and Lyophobe

Hartman cites the following case in his well-written textbook on colloid chemistry (3). Noyes called the attention of physical chemists in 1905 to the distinction between those colloids that were 'nonviscid, nongelatinizing and easily precipitated by salts', and those that were 'viscid, gelatinizing, and not easily precipitated by salts'. He called the former 'colloidal suspensions' and the latter 'colloidal solutions'. Because the 'colloidal suspensions' did not settle out as 'true suspensions' do and because the 'colloidal solutions' could be separated into solute and solvent by dialysis unlike 'true solutions', many physical chemists tended to reject the classification until Perrin and Freundlich introduced the Greek words that even the Greeks did not have for them, *lyophilic* and *lyophobic*.

Atoms and Molecules

In the eighteenth century the words 'atom' and 'molecule' were used interchangeably to mean a small particle. In 1808 Dalton suggested the relation between the combining weights of elements and the relative weights of the ultimate particles of elements and compounds. He referred to these ultimate particles as 'atoms', whether of elements or of compounds. NaCl he would have called the 'atom of salt'.

Three years later Avogadro, impressed by Gay-Lussac's publication on the combining volumes of gases, drew from it one of the most fruitful conclusions in chemical history. Adopting Gay-Lussac's opinion that in the gaseous condition there is no appreciable attraction between the particles, he deduced with rigorous logic the uniform distribution of particles in all gases under the same conditions, the proportionality between gas densities and the relative weights of the particles, and lastly the complex structure of these particles. This last conclusion compelled him to split Dalton's 'atom' into three terms: The *smallest possible* particle of an element he called the 'elementary molecule'; today we call it the atom. The *independent* particle of a *gaseous element* he called the 'constituent molecule', and the *independent* particle of a *gaseous compound* he called the 'integral molecule'; today we call both of these simply the molecule.

But Avogadro's contemporaries were reluctant to follow him. In addition to experimental facts running contrary to the apparent consequences of his theory, there were objections seemingly based on logic but actually on logomachy.

The word 'atom' seemed so much more precise than 'molecule' that chemists continued to use it in preference to the latter. What Avogadro called the 'constituent molecule' of hydrogen they called the 'atom' of hydrogen. But Avogadro concluded from Gay-Lussac's experimental data that this same 'constituent molecule' was composed of two 'elementary molecules', *i. e.*, atoms. Avogadro's contemporaries naturally expressed this by saying that

> his elementary molecule is half of an atom. But how can one have a half-atom if by very definition the atom[1] is indivisible? This is indeed absurd!

Fidelity to terminological exactitude is no doubt one of the finer gifts of the classical education prevalent among scientific men in the early years of the nine-

[1] Greek, *a-tomos*, not cut.

teenth century, but even Dalton, who was only an indifferent scholar of Latin and Greek, had bound himself to his definition:

> I have chosen the word *atom* to signify these ultimate particles, in preference to particle, molecule, or any other diminutive term, because I conceive it is much more expressive; it includes in itself the notion of *indivisible*, which the other terms do not (4).

On one occasion Dalton argued with a colleague in favor of his formulas for water and hydrogen peroxide, HO and HO_2,[2] respectively. The other formulas would require fractional ratios of atoms. This, the gentle Quaker triumphantly concluded, proved his own formulas to be correct, 'for thou knows it must be so for no man can split an atom' (5).

The practice of using the term 'atom' for the smallest particles of both elements and compounds led to another error. Associated with the idea of indivisibility, the term led chemists to assign unconsciously to the compound some of the stability characteristic of the element. Hence, it was difficult for them to imagine a reversible partial breakdown of compounds. Not until almost a half-century after Avogadro's publication were the anomalous vapor densities and molecular weights of ammonium chloride and sulfuric acid shown to be due to dissociation of these molecules in the vapor state, removing the greatest objection to Avogadro's hypothesis.

One of Avogadro's few converts was Dumas. Around 1826 Dumas adopted the hypothesis and expressed it ten years later in the form: 'Equal volumes, equal numbers of atoms' (*i.e.*, equal volumes of gas, equal numbers of molecules). When it was objected that if this were true, the 'atoms' are divided into two when gaseous elements react and that this is absurd, since atoms are indivisible, Dumas airily replied, 'Chemistry cuts the atoms that physics can't cut. That's all!' (6).

Dumas' contemporaries had none of his flippant attitude. They, indeed, tended to take the word 'atom' too seriously. It was perhaps to avoid this tendency that Avogadro sedulously shunned the word. Instead, he wrote of half-molecules and quarter-molecules (7), which his contemporaries naturally translated literally as half-atoms and quarter-atoms. Moreover, he took the unit of molecular weight to be the weight of a molecule of hydrogen. This made the atomic weight of hydrogen fall on 0.5 and introduced many other fractional or mixed numbers to the table of atomic weights. Inevitably this supported the objection that Avogadro was dividing the indivisible. Ladenburg describes Berzelius as feeling that

> It is absurd to assume fractions of atoms, and says that it was formerly the custom to abandon hypotheses as soon as they led to absurdity (8).

Phrasing and Meaning

Admittedly, there is some value to efforts at improving word usage among our students or ourselves, but too often our efforts are wasted on trifles. A case in triviality is that of the physician who complained that 'clinic' is used to mean bedless institutions such as dispensaries and out-patient departments, whereas the Greek word *kline* meant 'bed' (9). It is immaterial whether a titration be called a 'volumetric' or a 'titrimetric' procedure, since the meaning of the former is clear to any graduate chemist; its replacement by the latter word may, however, be justified in a classification of analytical procedures, to prevent confusion of titrations with gas-analytical methods (10). It is

[2] Or equivalent, since Dalton did not use these letter symbols.

inexact meaning, not inexact phrasing, that confuses. This all the more so because the meaning is often tacit and implied.

Where a word has two or more meanings, the confusion may be both serious and unconscious. In the benzoyl controversy 'radical' had come to have two different meanings, but Dumas and Berzelius seemed unaware of this. In the dispute over Avogadro's formulas, 'atom' had at least three meanings: the chemical unit of the element, the physical unit of the element, and the physical unit of the compound. Only Dumas and Avogadro seemed to have noticed this, and the former not at all too clearly.

Another example of identification of dissimilar objects by using a single word for them is given by the reception of Faraday's law of electro-equivalence. A century ago the word 'electricity' contained both the concepts of quantity (measured today in coulombs) and that of intensity (measured today in volts). Faraday himself pointed out that his law related combining weights only to the quantity of electricity and that it was the intensity of the current that was a measure of the chemical affinity. Nevertheless, Berzelius and other chemists between 1834 and the 1880's persisted in confusing the two aspects of electrical energy, thereby delaying acceptance of Faraday's law and the development of a consistent electrochemical theory of valence.

Another example is the confusion of temperature and heat in Newton's mind, a confusion due to his using for them the same word, 'heat' (11).

Then, too, there was the derisive questioning of Arrhenius in the early days of the ionization theory,

> If sodium chloride dissociates in solution, why does not the sodium react with the water?

Here 'sodium' meant both the free metal, with its own characteristic properties, and also the common fundamental constituent of the compounds and allotropic forms of the element. This double meaning of 'element' is a very common error, as we all know (12).

In none of these cases was the misunderstanding prevented by meticulous phrasing. In some, the error might have been prevented by careful definition of terms, but certainly not by holding to the traditional or etymologic definitions. There are reasons why apparently precise definitions, moreover, do not always prevent confusion of meaning.

Definition and Meaning

The bare formal definition of a chemical concept is often embellished or even obscured by subjective and sensual side-pictures. Geometrical figures and mechanical analogies are often necessary in teaching, especially in physics and physical chemistry, but they tend to leave a deeper impression than the formal logical definition. The human mind tends to prefer such side-pictures. A graduate student once told me that his mind pictured the electron as a 'blue-hot ball of fire whizzing on a dotted curve around a bigger ball, the nucleus' . . . . Much might be done for chemical education by a well-trained psychoanalyst.

Moreover, definitions are themselves composed of words and often these latter are themselves in need of clear definition. Sometimes a definition merely transfers the ambiguity from one word to several. Sometimes the ambiguity is concealed by the apparently simple words composing the definition. In the definitions of element, compound, and mixture we frequently meet the undefined terms 'pure', 'simple', and 'decomposed'.

According to Bridgman (13), the

meaning of a concept is merely the operation associated with either the concept or its measurement. Introducing a new technic or tool means introducing a new definition, or at least a new meaning. The introduction of X-ray diffraction changed the meaning of 'crystalline' from 'bounded by plane surfaces' to 'possessing a definitely ordered internal arrangement of atoms and/or molecules'. We can speak today of crystalline cellulose and of the crystal structure of stretched rubber. During the nineteenth century there were no methods available for separating elements into subspecies, so an element could then be defined as a non-decomposable simple substance. Since 1900 the positive ray beam, molecular rays, the mass spectrograph, and the separation of isotopes have caused us to split the element into its isotopes and to split accordingly the unit of atomic weight into the chemical unit (with $O = 16$) and the physical unit (with $O^{16} = 16$). We changed the definition of element, basing it on the atomic number as found by X-ray spectra. We changed 'atomic weight' from 'relative weight of an atom' to 'mean relative weight of the atoms'.

Frequently, if a definition is couched in abstract terms it remains unchanged in the textbooks after considerable change has occurred in the experimental technics. The teachers and students, writers and expounders, will then continue quoting the old definition, without realizing that the operational meaning is now something else.

Changes of Definition

Often 'incorrect' usage is merely a change of definition, carried out unconsciously or tacitly. We may criticize those who are so undiscriminating as to fail to state explicitly the new definition, but we must admit that definitions can legitimately change.

Often a definition has been broadened so as to include a larger class, as: alcohol, alum, spinel, aldehyde, acid.[3] Or it may be restricted to a smaller class, for example: 'isomerism' once included polymerism, but now it is restricted to cases where the molecular weights are the same. A definition may be changed in order to abandon a disproved theory or law. Berzelius (14) defined catalysis as 'the decomposition of bodies by this [catalytic] force'. Ostwald changed it to one based on reaction velocities. Or the definition may be changed so as to save a theory or law. Proust's argument with Berthollet over the definite composition of compounds was won partly by experimental proofs and partly by the decision to count only those substances as compounds that had a uniform definite composition. Thus a law was rewritten as a definition. This frequently happens.

Sometimes, however, we are free to decide which of two mutually dependent statements we shall call a definition and which we shall call a law. This is quite frequent in thermodynamics. Thus, we can define temperature as the linear function of the volume of the mercury in a mercury-in-glass thermometer and then show experimentally that the pressure-volume product pv of a gas is almost a linear function of this temperature (Boyle-Charles law), or we can define temperature in terms of the pv product of hydrogen at low pressures (perfect gas thermometer) and then show experimentally that mercury has an approximately constant coefficient of expansion. Again, the ideal gas has three equally valid definitions, any one of which can serve as *the* definition, the other two being then termed 'laws' (15). In all such cases our

[3] Originally *acetum*, vinegar.

choices of definition can be made to suit our convenience, and it is sheer pedantry to quibble as to which is definition and which is law.

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THE PROBLEM OF CHANGING FOOD HABITS:

*With Suggestions for Psychoanalytic Contributions**

MARGARET MEAD

THE Committee on Food Habits is an interdivisional committee of the National Research Council, which is administered by the Division of Anthropology and Psychology. In the course of the last two years the Committee has been developing a systematic approach to the problem of food habits in American culture and the methods which may be used to change those habits when they conflict with or fail to make use of the best findings of the science of nutrition. Changes in the dietary pattern of our country are desired because it appears that our people are not as well nourished as they could be in view of the food resources we have. I am going to outline to you briefly some of the results of our research so as to give you a background for discussing the contributions which psychoanalytic research might make to the problem.

In the first place, it has been necessary to emphasize that we are dealing with the problem of *food* habits, not merely with the problem of habits. The findings of psychology on the general subject of habit formation throw only a very limited light upon the problem of changing food habits. Food habits as distinct from other habits, must be localized in the body, anchored in a series of specific zonal behaviors and understood in terms of the way in which American culture has patterned those behaviors. When we have examined, by various methods American food habits—through tests developed by Professor Kurt Lewin of the State University of Iowa, through analysis of interview material, the symbolism employed in current advertising, verbatim replies on questions addressed to random samples of the population — certain tendencies have become clear. When American food habits are compared with those of various European nations[1] and with those of primitive peoples we find that eating in America is primarily a "super-ego" problem, that *if you eat enough of the food that is not good but is good for you, you are then permitted to eat a little of the food that is good but is not good for you.* This attitude is instilled into each generation by the use of reward and punishment and as a result the findings of the

* Part of an address presented to the Topeka Psychoanalytic Society, December 11, 1942. Margaret Mead is Associate Curator in the American Museum of Natural History and Executive Secretary of the Committee on Food Habits, of the National Research Council. Her paper is reprinted from *Bulletin of the Menninger Clinic*, Vol. VII, pp. 57-61 (March 1943) with her permission and that of the editors. It is hoped by the editors of *ETC* that semanticists may also be able to contribute to an understanding of the problems so interestingly presented by Dr. Mead.

science of nutrition do not become an automatic part of our cultural tradition but remain a subject of moral choice for each individual.[2] For example, men and children are supposed not to like vegetables. It is women's responsibility to see that the family eats vegetables, by coercing the children, cajoling the men, and by camouflaging the disliked vegetables in various ways. Sweets and desserts are used as rewards. American mothers do not see how one can teach children to eat without bribes, and they are amazed to learn that certain cultures do not use desserts.

As a result of this attitude, eating becomes a method whereby the growing boy can express his rebellion against parental control by choosing the wrong foods. The pleasure element which enters into consuming forbidden foods, into eating between meals, eating too many sweets, raiding the ice box, etc., is primarily the pleasure that comes from defying the dictates of conscience on a small scale, the very venial sin whose commission gives rise to a mild and mischievous pleasure rather than to an intense sense of guilt.

Psychoanalysts will recognize that when eating is dramatized as a conflict, with mother and wife exercising a taboo and child and husband defying it to prove their independence and masculinity, appeals to the conscience as a means of establishing better eating habits will not be sufficient.

Examination of the various socially sanctioned moves to improve the food habits of the American people, and examination of the motivations invoked by the group professionally charged with such improvement, leads to the conviction that this moral emphasis, in which food is thought of as part of a moral plot, is omnipresent. It is furthermore striking that Americans, in contrast to members of many other cultures, take a very limited sensuous pleasure in food or in the act of eating. Americans when questioned as to favorite foods are apt to name an undefined category of food—"a steak," "ice cream"—without specifying any of the details which would define a sensuous image. The appearance of the food is often of greater importance than the taste, and where pleasure is taken in eating snacks as snacks, the pleasure is not a sensuous one.

Beyond defining this particular characteristic plot which defines the food situation for the American child, and to some extent for the Protestant child in Europe also, research has not yet led us into the more unconscious aspects of the way in which attitudes towards food are built into the American character structure. Dr. Hilda Bruch is continuing at Johns Hopkins University under the auspices of the Committee on Food Habits her study of obese children[3] and is adding to this a study of allergic and diabetic children. It is hoped that detailed case studies of these children whose attention is intensively focussed on food may reveal further the psychodynamics which underlie American food habits.

Psychoanalytic literature is rich in material on oral and anal attitudes but this material has never been organized to show the specific psychodynamics of American character structure. Most of the material, as presented, is equally applicable to individuals from many different cultures and economic classes and deals with mechanisms which have not been detailed in their specific, culturally patterned forms. There is urgent need for the organization of this material in such a way that we may be able to make statements, in terms of psychoanalytic frames of reference, about the difference between American, German and French,

Eskimo, Hottentot and Samoan character as it may be described in the organized attitudes toward food and eating.

Specifically, it is possible to outline several areas in which psychoanalytic research might bring valuable results.

1. *An exploration of the developmental process as patterned by American culture, in order to describe and place the period at which eating becomes delibidinized and classified as a super-ego problem.* The relationship of breast and bottle feeding, methods of weaning, methods of enforcing schedules and sequences of unpreferred and preferred foods all need examination, as the residues of these experiences manifest themselves in analytic productions. It is possible that the mere repetition of a sequence in which a food, assumed to be disliked, is, if consumed, followed by a food which is assumed to be liked, may establish a close connection with the super-ego development. Interdictions of certain types of behavior at table, such as the habit of using the family dinner table as a forum where delinquencies are rebuked and deviations in table manners continually remarked, may also play a role. It is probable that clues to the cultural regularities in these types of behavior may also be found in the contemporary behavior of patients, the incidence and forms of periods of extreme oral indulgence or self-denial, the idiosyncratic food taboos which individual patients will establish which may, when examined, prove to have a common form which can be described and so on.

2. *An exploration of the divisions which are made between food and drink, on the one hand, and between serious meals and 'snacks' on the other.* It is possible that this inquiry may throw light upon the specific dynamics of American alcoholism, as compared with various European forms of alcoholism.[4]

3. *An exploration of the terms in which Americans classify that which is inedible.* Comparative cultural studies show that there are a variety of headings under which that which is not traditionally acceptable as food may be presented to the growing child, as (a) 'not food, but dirt, that which is disgusting, contaminating, may be equated with excrement'; (b) 'not food, but of the same nature as human flesh so that to eat it would make one a cannibal', e.g., horses, dogs, pets, animals which are served as whole skeletons, etc.; (c) 'not food, but a representative of the male or female genital and therefore to be shunned as arousing intolerable fantasies'; (d) 'not food, but something magically strange and dangerous, to incorporate which would be to run into great danger.' These categories are not, of course, mutually exclusive, and probably a certain element of each may be found in the complete food rejection attitudes of any people, but there seems good evidence for expecting them to be differently patterned in different cultures. It is the patterning, the specific content, the hierarchy of dominance among the different settings of rejection which should give the peculiar character to the food rejection attitudes in a given culture. In any attempt to introduce new foods it is important to know just what the structure of these rejection categories is.[5]

To date no systematic exploration has been made of the extent to which deeply unconscious trends are culturally patterned. While an exceedingly strong *a priori* case can be made for the position that it would be impossible to pattern parts of the human personality without significant adaptive patterning of all other parts of the personality, there is also some material which suggests that

certain processes usually identified as 'unconscious' have greater uniformity from one culture to another than do those processes labelled as 'ego processes.' However this may be, until this relationship is empirically determined, it would seem that it is worthwhile from both a theoretical and a practically useful angle, to turn psychoanalytic methods and insights upon this problem of defining the developmental steps by which typical American attitudes toward food and toward changing food habits are established.

I have presented this material to you partly because I am interested in obtaining your collaboration in solving this particular set of problems and partly as an illustration of the way in which I believe psychoanalysts can make a more immediate and telling contribution to the affairs of contemporary society, the prosecution of the war and the implementation of the peace. Not until psychoanalytic insights into human mechanisms have been specialized into insights into the psychodynamics of an identifiable group of people at a given epoch in history do they become available for social planning. Yet it would be tragic if this wealth of insight were not to be made so available. The successful application of psychoanalytic theory and techniques to the solution of any one present day problem —such as that of altering American food habits to preserve nutritional standards in the midst of war shortages—would pave the way for a more widespread contribution to the pressing social problems of the times.

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(4) A detailed analysis of Balinese food attitudes shows a clear dichotomy between the series: drink and snacks, no bodily involvement, urination unaccompanied by shame—and the series : serious meals, inevitable bodily involvement despite the attempt to predigest the food by chopping and altering its form, and defecation accompanied by shame. See BATESON, G., AND MEAD, M.: *Balinese Character: A Photographic Analysis*. N. Y. Academy of Sciences, Special Publications II, 1943.

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THE BROTHERHOOD OF DOCTRINES

ALFRED KORZYBSKI

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EVERY now and then there appear in the history of humanity gigantic thinkers who shape and mold our mental processes for centuries to come. In our own time, we are witnessing the turning of a page in human history. The birth of a new era is in the air; a host of men in all walks of life feel it unconsciously and work in the same direction. A few leading mathematicians have made these unconscious strivings of mankind conscious—without them we would feel our way but in the darkness, which is a slow—very slow—process of guesswork, whereas with their work our path is clear.

I hope the reader will understand the inherent difficulties which beset any attempt to give a general summary of a new epoch which is still in the making of its own foundations.

In the space allotted for this writing only a very few of the most momentous points can be sketched, and I make no pretense to finality. The aim is to draw the attention of scientists, and thinkers, to the fact that something of grave importance for all our human future is going on; to encourage inquiry and collaboration, and thus to accelerate the inevitable.

What I here call the inevitable is the coming of the empire of sound logic—a logic demanding scientific knowledge of human nature, adjusting human beliefs, institutions, doctrines, and conduct to the essential facts and laws of human nature, and converting the pseudo-sciences of ethics, economics and government into genuine sciences for promoting human welfare.

The 'Brotherhood of Man', of which we all dream, can be accomplished only and exclusively by the 'Brotherhood of Doctrines'.

It will be found that, when what Keyser calls the 'Great Stupidity', has been eliminated by sound logic; all that is dismal, destructive, woeful and despairing will become constructive, hopeful, and favorable to human weal.

Such inquiry will show that many doctrines, first established by myth and magic, still persist; and although, at the first glance they seem harmless, their sinister effect retards human progress, knowledge and happiness.

The history of human thought may be roughly divided into three periods, each period having gradually evolved into its successor. The beginning of one period overlaps years of the other. As a base for my classification I will take the relationship between the observer and the observed. In speaking about these periods I will not take into account individual thinkers, because in many instances it may be found that certain thinkers (Plato, Lucre-

tius, Leibnitz, etc.) in a given period were far ahead of their contemporaries, and that their theories or discoveries which had no great influence in their own time were prophetic expressions of the latest developments of science. Thus I will only speak summarily about those currents of thought which immediately affected the fate of 'Common Humanity'. The germ of protest and criticism was indeed present in man since man began and this element was always, as it is now, responsible for all human progress.

The first period may be called the Greek, or Metaphysical, or Pre-scientific Period. In this period the observer was everything, the observed did not matter.

The second period may be called the Classical or Semi-scientific—still reigning in most fields—where the observer was almost nothing and the only thing that mattered was the observed. This tendency gave rise to that which we may call gross empiricism and gross materialism.

This third period may be called the Mathematical or Scientific Period which began in 1854 with the work of George Boole's 'The Laws of Thought'. This work started an internal revolution in logic and also in mathematics, which ultimately resulted in the last few years in the merging of both into one—the discovery that logic and mathematics are one. In this period mankind will understand (some understand it already) that all man can know is a joint phenomenon of the observer and the observed.

We might otherwise call the three periods:

(1) The Absolutist Period.
(2) Mixed Absolute-Relativist Period.
(3) The Relativist Period.

The general characteristic of the first two periods was that they both used traditional, insufficient, often fallacious subject-predicate, Aristotelian logic which must result, as it did, in a philosophical impasse. The confusion became so acute that hardly two thinkers could be found who were able to understand each other except through sympathy.

The Old Logic Hampers Everything

It may be proved also that the direct result of this faulty logic has hampered enormously the natural sciences and progress in all fields of human affairs. The history of mankind, despite all the beauty and culture in it, has been in greater measure a history of misery and periodical collapses, wars and revolutions.

Complete consistent 'absolutism' leads obviously to blind fanatical theories. The mixture of absolute and relative concepts and words, leads to confusion and bewildering paradoxes. Consistent 'relativism' clarifies this whole hopeless mess and probably will lead toward a real absolute—if such a thing exists.

In this new mathematical-scientific era the simple truth was discovered that all we know is a joint phenomenon of the observer and the observed, which means that for science and life logic is as vital a factor as 'facts' because, for human knowledge, there are no 'facts' free from the share of the observer's mind.

General truths cannot be established by gross empiricism, which deals only and exclusively with particular observations, and this is why the classical tradition led automatically to doubt and unwarranted pessimism, so characteristic of that period. Obviously, if there is such a thing as general knowledge, its foundation must be found outside of gross empiricism. Most probably such a thing does exist and its origin may be traced to the constitution of the human mind itself—to sound modern logic (mathematics).

Someone may ask, how about 'intu-

itions', 'emotions', etc. The answer is simple and positive. It is a fallacy of the old schools to divide man into parcels, elements; all human faculties consist of an inter-connected whole. We select to deal with logic, because the laws of thought are the only aspects of the whole which are tangible and invariant, the eternal laws of thought which can be handled rigorously. When the problems of this aspect are solved, the others, the vague ones, will fall into line automatically. As Keyser pointed out, it matters what an animal is; with man, it matters not only what man is, but even more, what we humans think man is. The tragedy of man has been and is, that in creating his institutions and ethics he never was conscious of it. But deep in the human heart there is this quest for the abiding, for the eternal.

Already I have given a hint as to how the source of general knowledge can be found in the inherent constitution of the human mind. If I may, I shall give more hints. Let us imagine that in the night, during our sleep, the whole universe, ourselves included, 'grew up' ten, one-hundred, or 'n' times. Is there any human possibility of detecting in the morning this remarkable event? It is a well proved fact that the answer must be negative. Man could not detect this change. His room had, let us say, ten steps in the evening before the change; it would have ten steps in the morning after the change.

It is obvious that such metaphysical 'absolute' space is not an absolute space; this example does away with absolute space. But it is easy to see that the number ten (or any other) has remained. Similar reasoning proves that, to the best of our knowledge today, all absolutes have gone except number, whatever number is. If we could succeed in squeezing out some wisdom, some general knowledge, from number, which is this 'only absolute left', we would be entitled to expect that this wisdom would contain the germ of absolute knowledge. As a fact this is being done by a few leading mathematicians.

Modern mathematics deals formally with what can be said about anything or any property. As the reader can easily see we are witnessing the birth of the wonder of wonders—the birth of what may be called 'qualitative' mathematics. Here it may be explained why mathematics has this exclusive position among other sciences. It must be emphasized that it was not some special genius of the mathematicians, as such, that was responsible for it. With the birth of the rational being—man—rational activity began spontaneously (no matter how slow) and this rational activity manifested itself in every line of human endeavor—no matter how slight this rational activity was. Today we know that all man can know is an abstraction. The process of constructing those abstractions is quite arbitrary. Since man began he plunged into this process of constructing arbitrary abstractions—it was the very nature of his being.

Man Blundered Into Mathematics

Obviously, in the beginning, he did not know anything about the universe or himself; he went ahead spontaneously. It is no wonder that some of his abstractions were false to fact, that some of them were devoid of meaning, and hence neither true nor false but strictly meaningless, and that some of them were correct. In this endless spontaneous process of constructing abstractions he started from that which was the nearest to him—namely himself—and ignorantly attributed his human faculties to all the universe around him. He did not realize that he—man—was the latest product in the universe; he reversed the order and anthropomor-

phized all around him. He did not realize, and this is true even today in most cases, that by so doing he was building up a logic and a language unfit to deal with the actual universe, life, man included; and that by doing so he was building for himself a mental impasse. In a few instances good luck was with him; he made a few abstractions which were at once the easiest to handle and were correct, that is, corresponding to actual facts in this actual universe.

These were numbers.

Let us see how numbers originated and what was their significance. Any one may see that there is an actual difference between such groups as x or xx or as xxx; whatever the class was composed of, be it stones, figs, or snakes. And man could not miss for long the peculiar similarity between such xx a class of stones or such xx class of snakes, etc., and here happened a fact of crucial significance for the future of man. He named those different classes by definite names, good luck saved mankind from his ignorant speculations; he called the class of all such classes x 'one', the class of all such classes xx 'two', xxx 'three', etc., etc., and number was born.

Here as everywhere else 'le premier pas qui coute'; having created number the rest followed as a comparatively easy task. Man could not miss for long seeing, that if such a class x is added to such a class x he gets such a class xx, but the other day he had called such classes by names 'one' and 'two', so he concluded that 'one and one makes two'—mathematics was born —exact knowledge began.

Good luck combined with his human faculties has helped him to discover one of the eternal truths.

The creation of number was the most reasonable, the first truly scientific act done by man; in mathematics this reasonable being produced a perfect abstraction, the first perfect instrument by which to train his brain, his nerve currents, in the ideal way befitting the actual universe (not a fiction) and himself as a part of the whole. Now it is easy to understand from this physiological point of view why mathematics has developed so soundly.

The opposite can be said about the other disciplines. They mostly started with fictions, and until this day they persist and, playing in vacuo, bring havoc in the life of man.

Mathematics started aright—the others did not!

The biggest triumph of human thought was, and for ever will be, the discovery of new mathematical methods embracing larger and larger parts of the whole—these are the mile stones of man's progress.

A Review of 'Mathematical Philosophy'

'Mathematical Philosophy' by Keyser is one of those mile stones of everlasting significance. In this monumental work there are discoveries of the gravest importance.

Keyser is one of the three in the world, as far as I know, who is blazing a new trail in this field. Whoever is interested in human progress, and who of us is not? should read and reread the book. The peculiarity of such works is, that the range of their bearing is so vast that it takes time and meditation to digest and appropriate their seemingly simple content. Neither must it be forgotten that the old traditional logic and its progeny, our language and habits, work against us.

The reader may be reassured that this 'new' wisdom is much easier than the old one. Mathematics is nothing else than common sense refined and elevated to the rank of science—it is natural to man—it covers his 'intuitions'; whereas the old

logic was not equipped to deal with the living thought without an unnatural constraint; generally speaking, it rarely covered 'intuitions' and common sense.

The reader will get the first sharp mental shock in reading the title, which tells us that mathematical philosophy, that is, the only rigorous scientific philosophy, is the 'study of fate and freedom . . . it will become increasingly evident as we advance that the work we are to be engaged in is fundamentally the study of fate and freedom—logical fate and intellectual freedom. . . . Without more talk and without danger of misunderstanding, we may, I believe, now speak of ideas as constituting a world—the world of ideas. With that world all human beings as humans have to deal—there is no escape; it is there and only there that foundations are found—foundations for science, foundations for philosophy, foundations for art, foundations for religion, for ethics, for government and education; it is in the world of ideas and only there that human beings as humans may find principles or bases for rational theories and rational conduct of life, whether individual life or community life; choices differ but some choice of principles we must make if we are to be really human—if, that is, we are to be rational—and when we have made it, we are at once bound by a destiny of consequences beyond the power of passion or will to control or modify; another choice of principles is but the election of another destiny. The world of ideas is, you see, the empire of fate.

'Is the human intellect, then, a slave? No: it is free; but its freedom is not absolute; it is limited by fact and by law—by the laws of thought, by the immutable character of ideas and by their unchanging eternal relationships. Intellectual freedom is freedom to think in accord with the laws of thought, in accord with the natures of ideas, in accord with their interrelations, which are unalterable. And no variety of human freedom—no institution erected in its sacred name—if it does not conform to the eternal conditions of intellectual freedom—can stand'.

This discovery of logical fate and freedom, its formulation and elaboration, is of such importance that, were it the only one in the work, the work would live for ever. After some reflection, its practical bearing becomes evident in all that our talkings about 'Brotherhood of Man' or 'Democracy', etc., are beautiful words but meaningless so long as we do not inquire into the basic premises which underly those doctrines and investigate if the premises are true; because, if the premises should prove to be false, this 'logical fate' would drive us to disasters. Sad experience is daily making it more evident that a scientific (not metaphysical) inquiry is imperative. As a fact we have not hitherto had the method by which to approach or handle human affairs in a truly scientific spirit, but once this method discovered, we have no more excuses for continuing to welter in the old chaos.

There is, perhaps, nothing wrong with 'human nature', but there is something basically wrong with our old premises and logic. As a fact, every human activity has at its foundation some doctrine as an inherent, unconditionally inseparable part of the activity. Because of logical fate, the analysis of doctrine, which underlies all human activities, becomes the most important—nay the all-important—fact for all the future of man.

Keyser's New Method

Keyser, to the best of my knowledge, is the discoverer of a new mathematical method whereby this can be accomplished; in a wonderfully precise and clear way,

he elaborates the theory of postulates and doctrinal functions. Most of what he has to say is either entirely new, or given in a new form; he illustrates his thesis continually with many examples, so as to make it perfectly clear to the reader.

By the discovery and elaboration of this logical fate, which dominates our lives; by the discovery and elaboration of the theory of the doctrinal function, Keyser goes to the very roots, not only of all actual, but all potential human knowledge; to the roots of all human problems and relations. What is the importance of such theoretical works? Let me answer by an example.

The pyramids were built without the knowledge of exact sciences; quite true, but what was the waste in effort, the price in life and happiness which such ignorance brought upon the people? A Galileo, a Newton, a Leibnitz for instance, discovered some new facts, gave us some new definitions and formulated some new methods of handling old problems and at each stage of civilization such discoveries and their logical consequences transformed deeply all our knowledge and therefore affected enormously our practical achievements.

The theoretical discoveries and knowledge as expounded in Keyser's work will deeply transform all human activities, because it will enable man to revise uncriticized prejudices which, until now, we have accepted as truth. 'Thought unexpressed is thought concealed, and concealed thought—light hid under a bushel—fades and perishes with the thinker. Expressed, however, it lives and grows, engendering its kind, adding its flame to the flame of other thought, and so that radiance which is "all there is" increases and tends to abide'.

The book deals with many ideas interconnected of universal interest, of grave importance; they form a system which is bound to abide. A short list of subjects is an evidence of this: Intellectual Freedom and Logical Fate—Mathematical Obligation of Philosophy—Humanistic and Industrial Education—Human Ethics not a Branch of Zoology—Postulates—The Model of Principles and Platforms—Criticism and the Sword of the Gadfly—Municipal Laws and the Laws of Thought—Basic Concepts—Propositional and Doctrinal Functions—Marriage of Matter and Form—Its Infinite Fertility—Doctrines as Offspring—Interpretations—One Doctrinal Function the Matrix of Infinitely Many Doctrines Identical in Form, Diverse in Content—Essential Discriminations—Distinction of Logical and Psychological—Postulates Properties—Truth and Criticism—Mathematical Philosophy in the Role of Critic—Autonomous Truth and Falsehood—The Prototype of Reasoned Discourse Often Disguised as in The Declaration of Independence, The Constitution of the United States, the Origin of Species, the Sermon on the Mount—Transformation—Involved in all Thinking—Its study the Common Enterprise of the Sciences—The problem of Time and Kindred Problems—Invariance—The Ages-old Problem of Permanence and Change—The Group Concept—Variables and Limits—Mathematical Infinity—Hyperspaces—Open Avenues to Higher Worlds—Forms of Intellectual Emancipation—Mathematics of Psychology—Psychology of Mathematics—Science and Engineering—Change of Emphasis from Non-Human to Human Energies—Science as Engineering in Preparation—Engineering as Science in Action—Mathematics the Guide of the Engineer—Engineering the Guide of Humanity—etc., etc.

Such a book is bound to make a strong appeal to all intelligent people. All intelligent persons will find some of their

burning questions answered. For instance, parents are asking: Why should our children study mathematics? What is the educational value of mathematics? Scientists are asking: How is mathematical science related to the other cardinal enterprises of Man? Sociologists must ask afresh: What is Man? and how can mathematical thinking help to make the social sciences genuine sciences? Engineers would like to know: How can we humanize engineering? and so on.

'What Is That to Me?'

The layman, the practical man, the man in the street, says: What is that to me? The answer is positive and weighty. Our life is entirely dependent on the established doctrines of ethics, sociology, political economy, government, law, medical science, etc. This affects everyone consciously or unconsciously, the man in the street in the first place, because he is the most defenseless.

As a fact, most of the so-called scientists reject logic entirely, because the old logic is misleading, and they are entirely ignorant of this 'new' logic, though it is sixty-six years old. I explained before that science is a joint phenomenon of logic and facts, and there can be no escape from the conclusion that such scientists as ignore sound logic are not scientists at all, but merely clerks in scientific offices; and yet the people listen to them and are too often hypnotized by the nonsensical conclusions so misleading and immeasurably harmful.

How about the next generation? their future welfare and happiness? If they are taught false logic and false doctrines, mental cripples are produced, destined for a life of misery. Is this what parents want for their beloved ones? What of the teachers—the men and women—who in the literal sense are the builders of the next generations? What do they know about the latest progress of knowledge? Or are they still in the dark ages of ignorance? With these few points, the man in the street has sufficient reason to be vitally interested in this subject.

The new sciences are not strictly 'popular'. Scientists who have spent their lives in the studies of classical texts, and who are not capable of following up a little piece of sound reasoning, and even some mathematicians and engineers who have learned technic, without bothering to inquire into its meaning or justification, are bound to resent these views. The layman must be conscious of the resistance of their petty ambitions.

True knowledge cannot be concealed for long; ignorance, dullness, apathy may retard its application and this would mean one or two more generations in misery. It may take a still more terrible World War to whip mankind into the realization that man should use his brain and the knowledge already at hand.

A person of high standing, two years ago proclaimed the return to 'normalcy'. This word proved prophetic: 'normalcy' appears to mean the return to waste, combat, strife, strikes, wars and revolutions. Is such a 'normalcy' normal to man? Is the static animal world of no change befitting the dynamic being, man?

The writings of Keyser, besides their great scientific value, have another quality not easily found in other scientific writers, namely, as unexcelled style of their own, making his writings not only jewels of thought but jewels of style and language as well.

✯ BOOK REVIEWS ✯

Literature as Experience

THE NATURE OF LITERATURE: ITS RELATION TO SCIENCE, LANGUAGE AND HUMAN EXPERIENCE, by Thomas Clark Pollock. Princeton: Princeton University Press, 1942.

Professor Pollock's *The Nature of Literature* gives a semantic explanation of the processes of communication in literature as compared with those in science. Literature, he says,

> has as its purpose the expression of an experience of a writer through the utterance of a series of symbols capable of evoking in the mind of a properly qualified reader a controlled experience similar to, though of course not identical with that of the writer. . . .

The approach to *total* communication of the affective impacts of an experience is then, the special feature of literature. Says Professor Pollock:

> Naturally an experience involves many *private* discriminations which cannot be expressed satisfactorily through a referential use of language. One of the great virtues of fiction, for example, is that it enables a writer to express through an evocative use of symbols his awareness of qualities and relationships of human beings which are too subtle to be pointed at by referential statement.

Science, on the other hand, is limited to the communication of those abstractions of human experience which are exactly verifiable. Of scientific statement, Professor Pollock writes:

> The attempt of men to communicate knowledge which can be exactly and certainly understood thus reduces itself, when successful, to the symbolization of publicly discriminable references. When most successful—that is, when most 'scientific'— such communication is limited to the statement of pointer readings and ideas logically derived therefrom. Pointer readings may be defined as publicly discriminable elements of experience, especially those elements which are the readings of pointers on measuring devices such as clocks, weighing machines, thermometers, and yardsticks.

The evocative use of verbal symbols, which is the distinguishing characteristic of literary communication, is considered by Professor Pollock with respect to six of their potentialities. The first is their power to act as original stimuli, that is to say, their potential effect as pure sound when spoken or as handsome specimens of penmanship or typography when read silently. The second is their ability to direct the course of the reader's experience as a hypnotist's suggestions do that of his subject. The third is the capacity of single words to evoke a complex of psycho-physiological responses quite independently of the logic of the statement of which they are a part, or, to put it more simply, the connotative effect of single words. The fourth is the power of verbal symbols to initiate an experience in

the reader which will complete itself more vividly than if it were directed by the writer explicitly and boringly to the bitter end. The fifth is their cumulative effect in a pattern which is, not equal to, but greater than the sum of their several effects. The sixth is their combinability into symbolic complexes, which having once been formed may be used as units of evocative symbolization.

Although the analysis of the mechanisms of literary communication in *The Nature of Literature* does not add to the number which have been described in one way or another by writers on literary theory before Professor Pollock, it throws fresh light on them by describing them consistently in the terms of the relatively new science of semantics. The semantic interpretation of literature which has been given such impetus by Ogden and Richards' *Meaning of Meaning* and Richard's *Principles of Literary Criticism* will undoubtedly be stimulated by this new volume. Its author's grasp of semantic principles and his independence in applying them to literature should command a wide audience of serious readers. His criticism of the just mentioned works of Ogden and Richard's for their elementalistic 'strategy' in classifying literature shows his originality and at the same time his temperance.

The impatient reader, it must be confessed, is likely to be discouraged by having to read through nearly a hundred pages before coming to the treatment of literature proper, which begins in the sixth chapter. The first chapter, which treats of the commonly accepted modern meanings of the word *literature*, may seem to him overelaborated. The second, third, and fourth chapters, which restate basic semantic principles, will not give him a great deal of new information if he has any acquaintance with semantics, and may seem to him a disproportionately long preamble if he hasn't. His impatience to get to the point—that is to 'the nature of literature'—after reading the first four chapters may make him skip through the important fifth chapter on the language of science, which is absolutely indispensable to the understanding of the succeeding chapters on the language of literature.

Any one who reads this book through carefully, will recognize its essential unity and the important contributions to the whole of each part, although he may not feel that the lengths of the parts are quite proportional to their importance. I, for one, should be willing to sacrifice some of the rather abstract material in the early chapters for a chapter or an appendix reporting in detail Professor Pollock's approach to a complete piece of literature either in his study or before a class. I shall certainly read with great interest any report of this kind which he may give us in a later book or article and so, I am sure, will all readers of *The Nature of Literature*.

Among these, as Professor Pollock remarks in his introduction, there will be representatives of three callings, the educators interested in developing reading techniques in the students in secondary school and college, the professors of *litterae humaniores* in colleges and graduate schools, and the actively practicing literary critics. It is to be hoped that some of these educators, professors, and critics will be stimulated not only to reinterpret literature to their several special audiences but also to report on their experiments to the general audience of all of us interested in literary theory.

SANFORD B. MEECH
Illinois Institute of Technology

Parricide and Peace[1]

MIND, MEDICINE, AND MAN, by Gregory Zilboorg, M.D. New York: Harcourt, Brace and Company, 1943. $3.50.

'When the sons came of age in the earliest human families and were powerful enough to compete with their father, they were naturally confronted with his opposition; he would not tolerate any competition. . . . The sons and brothers who had competed among themselves could not individually stand up against the powerful father. . . . The need to secure food as well as sexual partners, all of which was in the hands of the head of the family brought the brothers together and, thus organized, they overpowered the selfish dictatorial father. It would seem, then, that the first co-operative effort of human organization was promoted by economic and sensual motives and was inaugurated with the deed of murder.'

This is the kind of notion—that the first social organization was a co-op for father-murder—that scares the tender-minded away from Freudian theories and sends them scurrying back to less disquieting theories of human nature. But, as Dr. Zilboorg emphasizes repeatedly, there is no need to be frightened away by these gruesome reflections. The question is, what can we do with the theory once we have it? Does it or does it not throw light on problems that need to be solved?

In the case of this theory, it happens to be an extremely useful one. The 'murder' of one's father, either in reality or symbolically, is a necessary act both for the release of childhood resentments and for the attainment of adulthood. Replacing one's father as head of the family business, succeeding one's boss or superintendent and getting the job for oneself, overthrowing the tyranny of a king, or throwing out the party in power in a democratic society—all these are acts of symbolic parricide. Democracy, from this point of view, is psychodynamically a social arrangement that enables men to unite in brotherhood and commit symbolic parricide against premiers and presidents at regular intervals. Instead of recoiling in horror from such a notion, Dr. Zilboorg tells us, we must face the fact that aggressive impulses are there anyway. The important thing is to see to it that they take socially constructive forms. Democracy, from this point of view, is an extremely ingenious arrangement, making for peace. Because aggressions are symbolically gratified, they need not be actualized in, for example, war.

Fascism, on the other hand, 'is a catacylsmic attempt to revert the human community to that remote state of civilization in which the fathers of the primal horde was still all-powerful. . . . The father demands absolute obedience. He must keep the brothers in a state of constant dissension in order to secure his own peace. To achieve this he must bribe some of them to watch and to plunder and if necessary, to kill the other brothers. This is characteristic of the Fascist state. The Elite Guard, the Black Shirts, the Brown Shirts, the favored sons bought and corrupted to induce absolute obedience are constantly on watch against those brothers who must be kept in subjugation. The Fascist state represents a regression to the earlier, fratricidal state of civilization, to a phase which could not maintain itself even in . . . primitive civilization.' Both in German and in Japanese culture the enforced repression of normal parricidal impulses by the 'leader principle' and 'the divinity of the emperor' results necessarily in aggressions

[1] Reprinted by permission from Chicago Sun *Book Week*, May 9, 1943.

against somebody else: Jews, Czechs or Chinese.

This is only one of the many ways in which Dr. Zilboorg explains how the psychodynamic principles of Freud are eminently practical and usable. Realizing that psychoanalytic notions are extremely upsetting to our cherished idealizations of ourselves, and appreciating fully the resistances he must overcome, Dr. Zilboorg has an endlessly patient and tactful way of holding the reader's hand while he explains to him the more disturbing psychoanalytic facts of life.

Out of so much valuable information about man, his neuroses and psychoses, the history of the treatment of mental diseases, the relationship of psychoanalysis to social sciences and to religion, it is impossible to select one or two points and say, 'This is interesting,' and 'This also is good.' I started out to mark the important passages and found that there was almost as much blue pencil as black print in the book when I got through. Every general reader should read his account, early in the book, of what psychology is, and what misconceptions, both lay and professional, prevent intelligent discussion. 'Psychology,' he writes, 'deals with the total functions of the organism . . .' The popular notion that a psychological reaction is something 'purely mental' is shown to be disastrously misleading in its implications.

Furthermore, all lawyers should read his chapter on the legal aspects of insanity. Dr. Zilboorg shows that, as the rules are now arranged, it is impossible for a psychiatrist to take the stand in a court of law and do justice to himself or his science. The setup is entirely wrong, and the questions he is forced to answer are incapable of being answered in scientific ways. As matters now stand, 'legal insanity' is something entirely different from psychiatrists' notions of mental disease; it is as if there were 'legal pneumonia' as distinct from medically recognized pneumonias.

Finally, as a student of general semantics, I cannot refrain from quoting Dr. Zilboorg on a characteristic disorder of our times: his statement of it is required reading for teachers, preachers, scholars and other exponents of the verbal arts—including book reviewers. 'We know from clinical observation,' he writes, 'that many persons seem to talk as if only the words used are important and not the things behind the words; they weave endless meshes of words and well-knit phrases which have no tangible or otherwise sensible quality of actual concepts or things behind them. . . . One of the most frequent variants of this tendency of reason to become diverted or perverted from its true psychobiological function is the so-called "purely intellectual" type. . . . In these cases, reason rejects the psychological realities and stands alone with a few bare facts and lean concepts in its hands. The great majority of people show varying degrees of being "intellectual" in this sense. . . . These people are for the most part not sick people, but individuals whose primary defense of the ego is an artificial divorcement from the very sources of man's personality. . . . It is this characteristic variant of man's adaptation that played one of the most important roles in the violent opposition to the discovery of the dynamics of the unconscious, and to anything that is not measured by a ruler or not thought out as a well-arranged, systematized, seemingly very logical, incisive construction.'

If only there were some way of getting the Neo-Aristotelians to understand this!

S. I. HAYAKAWA

✡ NEWS AND MISCELLANY

Communication from Korzybski

Dear Hayakawa:

We at the Institute are very happy that you have been selected as the editor of *ETC.* We hear that some of the readers like the title *ETC.* and that a few do not. Personally I feel that the publication of the Society could not have a better title. After all, our work is based on a non-aristotelian orientation, in which a supposedly 'innocent' change in punctuation occurs. Thus, in an aristotelian two-valued orientation we habitually had a 'period and stop' attitude, *as if* what was said covered 'all' the characteristics of what we were talking about. In a non-aristotelian infinite-valued orientation we do not assume that whatever we may *say* covers 'all' the characteristics of a situation, and so we remain conscious of a permanent 'etcetera' instead of having the dogmatic 'period and stop' attitude. This turns out to be a key problem in general semantics and is much more serious than a mere grammatical device: it involves a whole re-orientation fundamental in our extensional work. For these serious and complex considerations of rigidity *versus* flexibility, please disregard the critics of the title *ETC.*, as it turns out to be a most appropriate title.

Yours cordially,
ALFRED KORZYBSKI

The Semantics of Personal Names

What's Your Name? By Louis Adamic (Harper and Brothers, 1942) is an extraordinarily interesting account of one neglected aspect of human symbolic behavior: people's reactions to 'funny-sounding' foreign names. In order to avert hostility or derision, as well as to avoid spelling troubles, immigrants have constantly changed or modified their names. But the change of name may itself react upon the person who has made the change. Sometimes he changes his habits in order to 'live up to' his new 'americanized' name; sometimes he is made unhappy because he is uneasy about having given up his 'right' name. Adamic's book is popular and non-technical, and it provides abundant case-studies interesting to the student of general semantics. In addition it tells us much about the special adjustment problems of immigrants and the children of immigrants.

English Teachers in Action

In an article entitled 'Some Misconceptions About General Semantics' (*College English*, April 1943), Francis P. Chisholm, of the Department of English, Syracuse University, gives a temperate and lucid explanation of his reasons for disagreeing with Professor Ronald S. Crane, of the Department of English, University of Chicago, who challenged the views of semanticists in an earlier article in *College English*, 'Semantics and the Teaching of Prose Literature' (October, 1942).

Professor Margaret Schlauch, of the Department of English, New York University, and author of *The Gift of Tongues* (Modern Age, 1942), has written an article entitled 'Semantics as Social Evasion' in the Fall, 1942, issue of

the Marxist quarterly *Science and Society*. 'The term "semantics",' she writes, 'is indeed being used with some of the rapt solemnity more properly associated with tribal cults and shaman's magic. Absurd claims are put forward for this discipline by non-specialists, and an eager if unfounded optimism is evoked in wide circles of the reading public. . . . With enviable confidence, Korzybski offers to lead us into the Paradise of proper understanding. He is presenting us with a variant of the familiar exhortation: Let us clear up our definitions and all will be well.' It is disheartening to find a scholar of Professor Schlauch's attainments harboring this tiresome misconception of semantics—a misconception quite widespread among people whose knowledge of the subject is limited to a review they read somewhere once of—what was the name of that book?—oh, yes, *The Tyranny of Words*, by some guy with a Japanese name.

Professor Schlauch's most remarkable discovery, however, is that some of Korzybski's views are 'obviously colored by race prejudice'. She bases this charge on a misreading of a sentence in *Science and Sanity:* 'One cannot but see, at least as far as the white race is concerned, that a change from an aristotelian to a non-aristotelian system must be momentous' (p. 52). This she interprets as meaning that Korzybski regards a non-aristotelian system as being 'beyond the capacities of persons with pigmented epidermis'. As a reading of the context reveals, Korzybski is merely limiting his statement to people of 'western civilization', and allowing for the possibility that non-white peoples, who on the whole have not been nurtured in aristotelian traditions, may not even need special training in order to achieve a non-aristotelian orientation.

'Brief Psychotherapy'

Dr. S. H. Kraines of the Illinois Neuropsychiatric Institute, University of Illinois College of Medicine, has written an important article on a brief technique of treatment for neuroses that may be utilized by the physician not psychiatrically trained. It is entitled 'Brief Psychotherapy' and appears in *Mental Hygiene*, January 1943 (Vol. XXVII, pp. 70-79). The most important stage of this brief therapy, according to Dr. Kraines, is the 'therapy of attitudes.'

In calling the attention of the editor of *ETC.* to Dr. Kraines's article, Alfred Korzybski writes: 'This therapy of attitudes is exactly the field where general semantics may be helpful to psychotherapy, and where we are successful, if successful at all. The change from the aristotelian to a non-aristotelian orientation is exactly that change of attitudes.'

'Memory'

Dr. Elwood Murray, head of the Department of Speech and Dramatics, University of Denver, has prepared some notes 'On Remembering and Forgetting'. We remember, he says, what our nervous systems evaluate as important and forget what we evaluate as unimportant. The improvement of memory, therefore, is not a matter of learning trick mnemonic devices, but presumably a matter of 'improving our evaluations'. 'A chief factor underlying the forgetting of a person's name,' he writes, 'may well be the evaluation we have made of him. It may be that unconsciously we do not evaluate him as important.' A further complication to the problem of remembering and forgetting is the fact that many persons feel that 'all forgetting is bad', while others react with another all-ness: namely, 'I cannot memorize poetry,' or 'I cannot remember names.'

Proper *ordering* of one's reactions, which implies 'less effort, less concentration on the words as such, and more concentration on the underlying territories,' will, Dr. Murray believes, in improving evaluations, also improve memory at the same time. On the basis of general semantics theory, there is reason to believe that Dr. Murray's perceptions in this matter are correct. Anyone investigating problems of memory who wishes to comment on Dr. Murray's views for the purpose of corroborating, modifying, or disputing them, is invited to communicate his findings either to Dr. Murray directly, or to the Editors of *ETC.*

Tensions and Personality

Can a personality be described, asks Dr. Lewis A. Dexter in an article entitled 'A Note on the Unification of Sociology and Physiology' in *Psychiatry* (Vol. VI, No. 1, February 1943), in terms of the organism's characteristic tensions? 'For example, it is entirely possible that when threatened with possible loss of prestige, Mr. X contracts abdominal muscles more markedly than do other people; whereas Mr. Y contracts eye muscles especially. . . . An organism learns to respond to similar situations in a similar fashion. A useful way of analyzing this process may be to analyze characteristic tensions of specific organisms. That is to say, organism *A* learns to respond automatically . . . to situations *b'*, *b"*, *b"'*, as resembling *b*. It follows that when any situation resembles *b* sufficiently, a complex pattern of tensions automatically arises. These automatically-appearing tensions are usually called habits; and habits—or patterns of habit—are usually called character. . . . Such amorphous notions as "attitude" might be given a definite location by students of tension.'

A Note from M. Kendig

For his formulations and exposition of *convergent phenomena* (following 'laws' of classical physics and the older notions of 'causality') and *divergent phenomena* (best understood on the basis of quantum theory of modern physics) and their application to an understanding of human affairs, and also for his remarks on the importance of intuition as against logic, M. Kendig calls the attention of readers to Dr. Irving Langmuir's address, 'Science, Common Sense and Decency', which appears in the January 2, 1943 issue of *Science.*

She also recommends to the special attention of educators the monograph by Coghill on *Early Embryonic Somatic Movements in Birds and in Mammals Other Than Man,* published by the Society for Research in Child Development, National Research Council (Washington, D. C., 1940). The last paragraph of the monograph shows its importance to students of general semantics: 'From this consideration of the literature on fetal behavior one is justified in concluding that there are no primary reflexes that become integrated into more general or more comprehensive patterns, but that reflexes are secondary and are developed by individuation within a total behavior pattern of primary integration.'

R. M. Ogden, Professor of Psychology and Dean of the College of Arts and Sciences, Cornell University, has an article in *The Philosophical Review,* November 1942 (pp. 559-573), entitled 'Science and Knowledge.' He deals with the ancient 'quarrel' of science *vs.* art, religion, and social ideology in the light of general semantics. (In the same periodical, January 1935, Dr. Ogburn wrote one of the better reviews of the first edition of *Science and Sanity.*) Another important application of general se-

mantics is to be found in Chapter XXIII on 'Ideologies' in Paul Schilder's *Goals and Desires of Man* (Columbia University Press, 1942).

For a better understanding of psychosomatic factors in adjustment, Korzybski is generally recommending the *Bulletin of the Menninger Clinic,* issued bimonthly by the Menninger Clinic, Topeka, Kansas (annual subscription, $2). An especially important issue, that of January 1943, containing an article, 'Functional Disturbances in the Sexual Life of Women', by a member of this Society, Robert P. Knight, M.D., can be ordered from the Institute of General Semantics (price: 50 cents).

Preventive Guidance

'It has long been my personal belief,' writes Elsie May Smithies of the University High School, Chicago, in the *Journal of the National Association of Deans of Women* (Vol. VI, No. 1, October 1942), 'that educators have permitted too many things to happen to young people. As a palliative gesture educational programs have been including "remedial" courses in increasing numbers. Well might the educator look to the physician. In the field of medicine, no great advance . . . was made until doctors began to work on preventive medicine.

'Is preventive guidance a workable and feasible objective? . . . Can psychological principles be taught to adolescents so that emotional upsets can be prevented? If this type of instruction is to be at all practical . . . can these psychological principles be taught to *groups?*'

Miss Smithies believes that such 'preventive guidance' to groups is possible. In her paper she describes the teaching of general semantics to a group of 43 ninth-grade girls. A full account is given of the setting, conditions, and content of the instruction, and numerous quotations from the children themselves illustrate the kind of questions, problems, prejudices, and difficulties dealt with by the group. Indexing, dating, 'map-territory relationships', the permanent 'etc.', and the signs of 'emotional immaturity' were explained, and a report is given of the students' own accounts of their attempts (often successful) to apply formulations of general semantics to their own lives. Miss Smithies' paper will be of great value to parents and teachers interested in the application of general semantics in the education of adolescents.

Lundberg on Linguistics

'If science . . . should be the core of the curriculum in modern general education, some minimum attention should be paid to it by all students. What would be absolutely required under this view of education?

'In the first place I would require a demonstrated knowledge of the nature symbols and signs and the nature of the rules governing the use of symbols in human communication. . . . This I take to be what Hutchins means by his emphasis on grammar, logic, rhetoric, and mathematics. I thoroughly agree with him, *provided* it is clearly understood that I do not mean dead languages, primitive logic, or obsolete mathematics, but *modern linguistics, semantics,* and the *mathematics and logic of the past fifty years.* The *evolution* of all of these may be studied properly and profitably as history, mythology, magic, numerology, and superstition. But first, and as *necessary equipment* for the study of this background, the student must be familiar with contemporary tested knowledge on these subjects. . . .

'Adequate instruction in the fields of linguistics and semantics would contrib-

ute much to the resolution of the thoroughly obsolete cleavage between the "mental" and the "physical", between the "material" and the so-called "non-material", "social", etc., which is today perhaps the chief obstacle to the unity of all the sciences, including the social.' From 'What To Do With the Humanities', by George A. Lundberg, *Harper's Magazine*, June, 1943.

The Establishing of 'Meaning'

'Thomas Bartell, 25, on trial for the murder of his daughter, Linda, 20 months old, will see the completion of the jury today in Chief Justice John A. Sbarbaro's court. . . . Throughout the session yesterday, young Mrs. Thelma Bartell . . . sat with her mother, Mrs. Charlotte Tipton, who . . . will testify against Bartell, giving evidence that little Linda stiffened in fright at the mere sound of her father's voice.' *Chicago Times*, May 26, 1943.

News Notes

Between May and November, 1942, Dr. Hildreth Caldwell was chairman of a group of Los Angeles physicians interested in the study and discussion of general semantics. With the departure of many of the members of the group into military service, these meetings have been suspended. . . . Jeanette (Mrs. Wilkie) Mahoney, an honorary lieutenant-colonel in the U. S. Army, is engaged in morale and educational work with Negro troops. She has been employing with marked success general semantics methods in teaching illiterate soldiers to read and write. . . . Edwin Green's column 'General Semantics and Human Affairs,' which appeared weekly in the Los Angeles *Daily News*, has been suspended since his induction into the Army.

For five days last February, Donald McLean, consulting psychologist, sponsored at his Psychological Center in Los Angeles a seminar in 'Psycho-Somatic Aspects of Dentistry'. Participants were members of the Southern California Branch of the California Dental Association. Michael Walsh, nutritionist of San Diego, opened and closed the seminars; Mr. McLean contributed the second and fourth lectures, and Dr. Douglas G. Campbell of the University of California at Berkeley conducted the third session. This seminar was repeated in San Diego early in April, and in Berkeley in May.

Further applications of general semantics reported: In research work on stomach ulcers at the Mayo Institute, by Capt. (Dr.) Everett DeLong. . . . In articles and stories for the army newspaper, *Bomb Bay*, by Cpl. John Becket, 50th Airbase Squadron, Hammer Field, Fresno, California. . . . In a series of talks as a member of the Los Angeles City Defense Council, by Miss Vocha Fiske. . . . In the training of workers at the North American Aviation Company, by Mr. Richard Kilpatrick. . . . In personnel work for Carnegie Steel Company, by Mr. Lloyd Morain, of Pittsburgh, Pa. . . . In arguing an important case in torts, by Mr. Louis N. Wolf, attorney of Joplin, Mo.

An Appeal

The Editors of *ETC.* urgently request readers to send in (1) original manuscripts; (2) reprints of articles they have written, for possible republication in *ETC.* or for notice in our 'News and Miscellany'; (3) information about articles they have read, which ought either to be reprinted or editorially noted; (4) news, comments, and criticisms.

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Founded 1938. Incorporated under Illinois law as a non-profit educational institution for linguistic, epistemologic, scientific research and education.

To date teaching, writing, editorial, publishing and consultative activities have been chiefly directed toward encouraging personal and professional applications of general semantics. The *Papers from the Second American Congress on General Semantics* (published by the Institute, July 1943) constitute both a summation of the pioneer period in the work of the Institute and a practical sequel to *Science and Sanity: An Introduction to Non-aristotelian Systems and General Semantics* by Alfred Korzybski. The Institute is not endowed and depends on gifts, seminar tuitions and sales of publications for funds to carry on its work. Seminar courses will be continued as the war conditions permit. Detailed information about courses and publications sent on request.

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An excerpt from the preliminary statement of the editors:

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(2) Articles not dealing specifically with General Semantics but which either (*a*) clarify special problems and offer illustrations of the theories of General Semantics, or (*b*) give expression to points of view or aims parallel to the aims of the Society. It has frequently been remarked that one of the tragedies of scientific and scholarly publication is that articles which may be useful and important to workers in many diverse fields rarely come to the attention of any but the readers of a single, highly specialized journal. For this reason, ETC. will, in each issue, reprint from various technical journals selected articles which, because of their relevance to problems of human symbolic and linguistic functioning, merit the attention of an audience beyond the professional circles for which they were originally intended.

(3) Reviews of books which, for one reason or another, may be of importance to students of General Semantics. It will be part of ETC.'s policy to review old as well as recently published books. Because of the diversity of interests among members of the Society, books which are already well known for their value to semantic inquiry among a few members in one field of knowledge often need to be made known to members in other fields.

(4) News of activities in semantics, general semantics, and related fields.

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